COTTON

Volume LXXX
Number Two
Ten Cents a Copy

DECEMBER, 1915

Published Monthly by
W. R. C. Smith Publishing Co.
Dalton, and Atlanta, Ga.

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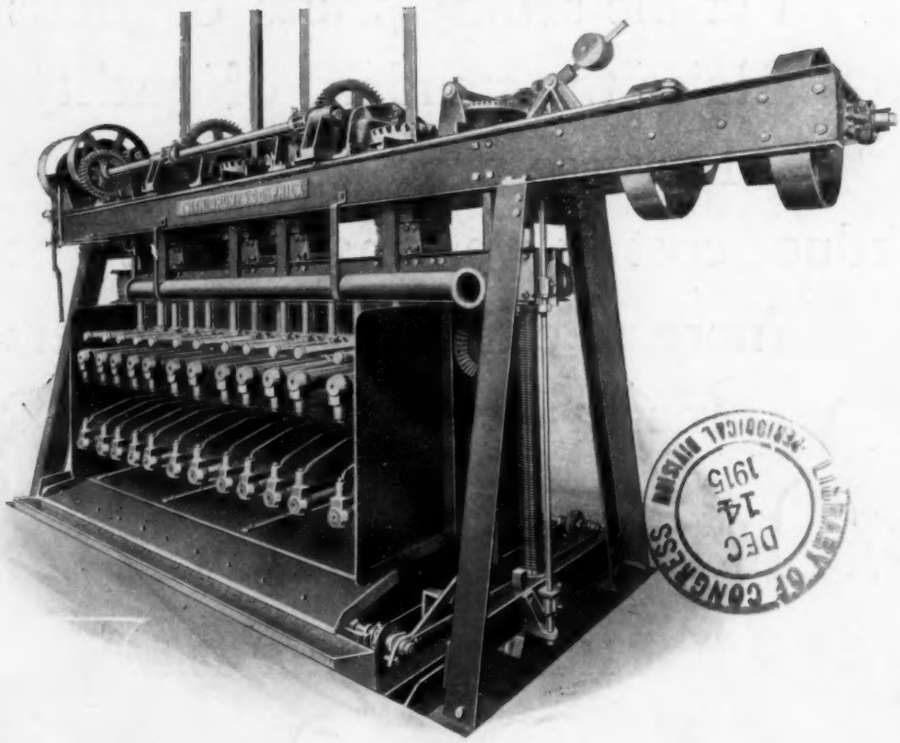

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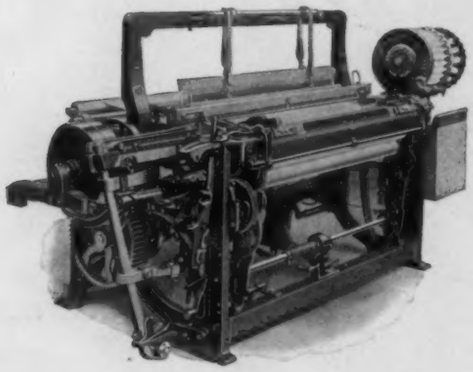

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Increase efficiency of weavers
Increase wages of weavers

DRAPER COMPANY

HOPEDALE MASS.

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SOUTHERN AGENT

188 S. Forsyth Street ATLANTA GA.

DEC 13 1915

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When changing address, *notify us*, not the postmaster. Always give the old address as well as the new one.

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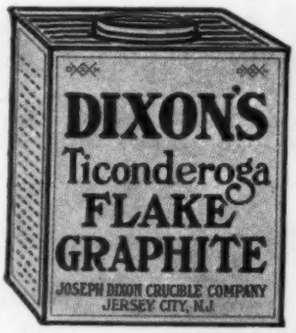
A Better Way to Lubricate



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Don't wait until you have an accident. Equip your machinery now with Allen Safety Set Screws and protect your workmen. All diameters from ¼ to 1½" furnished. Any length, point or thread. Send for Circular No. 21 and free sample screws for testing.

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The Southern Textile Exposition.

The textile machinery show held at Greenville, S. C., last month is now a matter of recorded history. That it was entirely successful is evident from the oral and printed eulogies emanating from all manner of sources, North and South. That it was fore-ordained to be a big success seems to occur to but few. Such was the case, however, and this predestination is chargeable to cooperation.

Cooperation among enough individuals will make a grand success of any movement mutually desirable. That some of those most directly interested lacked the imagination necessary to appreciate the size to which the exhibition was destined to grow is true, but this had no effect upon its ultimate growth. The desire on the part of the mill men for an exhibit of this nature to be held in the South, coupled with a growing desire on the part of machinery and specialty manufacturers to exhibit their products in this section was the motive power behind the movement.

The problem before the Executive Committee was first, to convince the machinery men of the wishes of the mill executives; second, to make the mill men appreciate the immensity of the completed show; and third, to handle the innumerable details of an exhibition of this size and character in a small city where proper facilities for handling the exhibits and visitors were not already at hand. The members of the Executive Committee are to be congratulated on the systematic way in which they handled a gigantic problem. The machinery and supply salesmen traveling the South are to be congratulated on the thoroughness with which they spread the news about the big show, as each one was a walking advertisement of the event for months previous to the opening day. In fact, everyone who did his part, no matter how infinitesimal, contributed by his cooperation to the ultimate success that was achieved.

A great deal of this work will never have to be done again. When the next textile show is announced for Greenville, a few years hence, the work of convincing the prospective exhibitors of its value to them will be eliminated; and the mill executives who failed to attend the exhibit last month and who are now excoriating themselves for their laxness, will be among the first to arrange to be present.

Greenville is now on the map as a convention city. Its citizens have been shown what can be done, and when a prophetic stranger once more sounds a warning note, they should listen, as the next textile show will be much greater than the last, not only in exhibits, but also in attendance.

Cooperation in the Mill.

The success of the Southern Textile Exposition, as indicated in the foregoing article, was due solely to complete cooperation. There is a lesson to be learned from this success and its cause, by every mill man in the business. Complete cooperation means cooperative efforts on the part of every man connected with the organization, from the president to the sweeper boy. The more complete the cooperation, the more complete the success of the mill where this cooperation is practiced. But, and here let us pause, the achievement in view to be successful must be *mutually desirable.*

The mill manager, regardless of his title, is anxious to produce a large quantity of high class product at a low unit cost. This desire is equally true of the different department heads of the mill, each in his separate department. The first problem for the manager, therefore, is to perfect some plan to make the department heads correlative; to make each overseer personally interested in the success of the mill as an entirety. If this is done thoroughly, the departments will interlock and the overseers will cooperate, not only with each other but also with efficiency experts, production engineers, or others called in for consultation purposes. It is only necessary to make the mill's success *mutually desirable.*

The second problem of the mill management is equally the problem of the overseers or department heads. This is the need for cooperation on the part of the operatives. In the mills today, as in all lines of constructive work, personality counts for much. The leaders of men acquire positions of authority, great or small, because of and in accordance with their ability to lead. But here, again, we find a discordant note. These minor leaders, whatever their titles, are largely individualists. Those in one department may cooperate to a limited extent, but as a rule, enough petty jealousy is involved to largely spoil the cooperative effect. To overcome this, and to make all these workers ambitions for the success of the mill, as a mill, calls for some broad constructive plan; a plan whose logical result shall be mutually desired by all.

This is the most vital subject being considered by cotton manufacturers today. Many approach it from the standpoint of welfare work. Some operate a bonus system. Some inaugurate a profit-sharing plan. But none are completely cooperative and none are wholly successful.

The plan that will insure success must be mutually desirable.

Who will make suggestions?

Progress in the Office.

Office methods have changed as well as factory methods. In the factory much has been done along these lines, and much has been said and written on the subject, while in reality, the modern office has had as many if not more changes made therein than has been made in the factory. The various changes in the factory proper, frequently receive more attention because the scale of operations is larger. If a machine is brought out to do work that has previously been done by hand, a great deal of thought is given before it is introduced and much said about it afterward. When a machine is brought out to lessen the work in the office it is generally introduced at once, but attracts only local attention. This is because the modern office is always inclined to want to be right up to the minute, and the investment is usually nominal. In fact, the office changes in the past twenty years have been greater and more radical than the changes in the factory. There are more systems for labor-saving in offices today than for the factory, in proportion to the comparative size of each.

What has been said applies particularly to the offices of large corporations, but regardless of how small a factory office is, it should have a good typewriter and a competent typist. A business letter written by hand, as they formerly were, leaves a very poor impression on the person receiving

it. In addition, the time saved by means of a typewriter is considerable.

Another machine needed in many offices is an adding or computing machine. Your office people may be accurate counters, but "it is human to err." The machine has no brains to get tired and make a mistake.

A machine that many offices need is an addressing machine. If one were placed on trial in every factory in the country probably fifty per cent of them would be retained. Not only is this machine a time-saver, but it also is a preventer of many mistakes.

Every factory that has a cost-keeping system also needs a billing machine.

In addition to these machines, other labor-saving devices for an office are filing cabinets, dictaphones, loose leaf devices and even pencil sharpeners.

These additions will reduce the office payroll and a dollar saved in the office is just as good a dollar as one saved in the factory.

Agitators Should Be Made to Prove Their Statements

PHILIP S. TULEY, president of the Kentucky Manufacturers & Shippers' Association, vice-president of the Middle States Textile Manufacturers' Association, and president of the Louisville Cotton Mills, Louisville, Kentucky, when questioned by COTTON'S representative on subjects of great present importance, said:

"I think that the manufacturers in any community would do well to realize that their problems are not so clearly understood by the public as these problems are understood by the manufacturers themselves. They take it for granted that the public understands and appreciates their efforts at welfare work, the centering of attention on prevention of accidents, their efforts to look after the well being of their employees, not necessarily in a paternalistic way, but at the same time with a sort of sub-conscious determination to exercise humanitarian ideas and plans and principles. Manufacturers don't realize that the public is not aware of the fact that they are thinking of these things. The public is not being reached in any direct way to show the manufacturers' side of the question, and this of necessity forces them to fall back on the sort of material that the agitator, the well-meaning, would-be reformer gets together. The information given them is inaccurate. They have an idea that the manufacturer is a slave driver.

"I have heard it said so often that the South is given over to manufacturing under the guidance of men who literally tie their employees to the stake, as it were. That these employees are perfectly powerless to get away from the community after they have once entered the mill village. We have taken the stand right along that this is not true of manufacturing in the South. We have taken the stand that if the thing were investigated from an impartial point of view, and with an open mind, that it would be ascertained that there is a great deal more welfare work being done throughout the South than most people are willing to concede; that there is a stronger tendency on the part of manufacturers to look after the moral and social welfare of their employees; and if there is any departure from that sort of condition it is the exception rather than the rule.

"I believe the manufacturers would do well to cease 'hiding their light under a bushel.' They make a mistake in leaving the public to the mercy of the agitator; letting a knowledge of the conditions be acquired solely from the sources I have described. It is a great injustice to themselves. They have not felt like blowing their own horns; they rather felt that this matter would be adjusted, and that this abuse which is heaped upon them would not be believed. That the better judgment of the people at large would come to the rescue of the manufacturer, so that he would not suffer from this sort of thing. That is where I hope the southern manufacturer will change his policy. I hope he will determine to let the public know the truth, and that he will see to it that the whole truth is given to them. I believe this is something he ought to do.

"At the last annual meeting of the American Federation of Labor, there was a story told by one of the speakers on the platform, upon which sat Secretary Wilson, of the Department of Labor, which was one of the most awful things I ever heard. The woman speaking told horrible stories of the exploitation of child labor throughout the South, and told these stories in all of their gruesomeness and left the vast audience, and still vaster audience of the Associated Press, to infer that those things were typical and characteristic of the South. I took the matter up with Mr. T. I. Hickman, then president of the American Cotton Manufacturers' Asociation, and said to him that I believed the association owed it to themselves to refute those slanders; that it would be a great deal better for the whole industry, if in the first place they would search out any instances, if there were any such as she had said, even going so far as to place an advertisement in such papers as would receive the advertisements, and offer the opportunity to any one who could prove that sort of thing, to do so, with the full determination on the part of the association of manufacturers to see to it that proper measures were brought to bear to correct such misrepresentations, or to ferret out such instances where the conditions were as the speaker described them. Mr. Hickman admitted it was something that ought to be done.

"At present there is only one voice heard in the land.

"We feel in our own state, in our association, (the Kentucky Manufacturers' & Shippers' Association) that it is desirable for us not to wait until other people force upon us a workmen's compensation law. We feel that is a just law and we have, therefore, in our organization, joined with a commission which is charged with the duty of studying all of the workmen's compensation laws of the 27 states which now have such laws on their statute books, in order, if it can be achieved, that there shall be joint action on the part of representatives of the Kentucky State Federation of Labor, of the Mine Owners' Association, of the Kentucky Manufacturers' & Shippers' Association, and others, with a view to eliminating any points of difference if it can be done. The South has been very unwise in allowing itself to be put in the position of having to be forced under the child labor laws that have been enacted. It would have been better for the manufacturers to have realized that it is impossible to operate their plants under modified conditions in that respect; it would have been more wholesome for them, and by laying stress on the necessity for compulsory education and the enforcement of truancy laws they would have seen to it that all children were *compelled* to go

to school, thereby eliminating illiteracy. The manufacturers would do well to lead rather than to follow the development of public opinion along those lines.

"Kentucky has never realized the necessity for the development of manufacturing as it should have done. Kentucky is more typically an agricultural state. It has been hampered exceedingly by very unwholesome tax laws, and it has just passed a statutory amendment that will enable them to classify property instead of adhering to the exceedingly unsafe and long since condemned system of Ad Valorem taxation without classification of property of various kinds. But the textile industry has not made the advance in Kentucky that it should have made. There is a great deal of unexploited labor in the small towns in Kentucky that could be used to good advantage.

"In our own plant, we have found it very desirable to center our attention on the prevention of accidents. We have resorted to the installation of safeguards on the machinery to make it as safe as we can. I have noticed that the builders of textile machinery have also been giving this question increasing attention recently. In our mill we have not had the opportunity to indulge in welfare work as it is possible to do where the operatives are centered in a small community, but we have installed a lunch room, where three-fourths of our operatives take their lunch, daily, at cost to us; and we have a branch of the public library there for the operatives so they have the privilege of that library without having to go to the more remote libraries in the city."

Middle States Textile Men Meet.

Cotton manufacturers from three states attended the midyear meeting of the Middle States Textile Manufacturer's Association, held at French Lick Springs, Ind., on Nov. 20th, and they were rewarded by a discussion of some unusually interesting propositions.

Declaration in favor of immediate revision of the tariff was perhaps the most important feature of the meeting, the manufacturers taking the ground that to attempt to wait until relief can be had from a tariff commission would leave the way open for the industry to receive great hurt, if not positive ruin, in the event of a cessation of the war.

The occasion for action on the tariff was the decision to have representation at an informal conference to be held in Chicago under the auspices of the Illinois Manufacturers' Association on December 7th. The meeting will be held at the Congress Hotel, and the association invited industrial associations all over the country to send representatives, their letter of invitation stating, "Tariff revision will be considered by the next congress, and those who will be most affected should take the initiative."

In view of the fact that the appointment of a permanent tariff commission has been suggested as a solution of the situation, and because it was felt that this would not in any way solve the problems that are now before the cotton manufacturers, those who attended the French Lick meeting were strongly opposed to having a program of this sort given even tacit endorsement.

"Commission work is all right in its way," said Lee Rodman, of the Indiana Cotton Mills, who is secretary of the association, "but it makes no difference how good the work of the commission, it is very slow in effecting legislation; and legislation is what we want and must have, *right now*. The industry needs a revision of the tariff immediately, and the appointment of a commission is something that we can afford to endorse, as a proposition to be taken up later, but *not* as something that will meet our requirements at the *present time*."

This statement of the situation was given the approval of the association, and the delegates named by President Paul J. Marrs, of the Henderson Cotton Mills, were instructed to take that stand at the Chicago meeting. Those appointed were Mr. Rodman, C. N. Brown, of the Lincoln Cotton Mills, Evansville, Ind., and E. S. Hobbs, of the Aurora (Ill.) Cotton Mills. Mr. Rodman will also carry credentials as the representative of the National Cotton Manufacturers' Association.

The question of open price competition, which has already been given a lot of attention in the trade, was gone into at length, and while no formal action providing for instituting it was taken, it seemed to be the concensus of opinion that this plan would work a great improvement in the situation. Sentiment developed in some parts of the country has been to the effect that this is a selling problem, and that mills should not enter into such an arrangement without the approval of their sales representatives; but at the French Lick meeting the point was made that this method would enable the mill men to get from under the domination of brokers and buyers, who, it was declared, now control the price.

The plan means intelligent competition, according to Secretary Rodman, who stated it in its details, and will keep members of the trade posted as they at present cannot be. He said that some cotton manufacturers do not keep up with the market, but that reports from the association or some central office organization for the purpose, giving the volume of sales and the prices secured, would greatly improve conditions, and at the same time would be strictly within the law.

Reference was made to the successful operation of the plan by the association of finishers, and also by organizations of manufacturers in other lines, such as fertilizer manufacturing, flour milling, vehicle and implement manufacturing, etc. It is probable, in view of the hearty approval given to the operation of the plan by the members of the association, that some arrangement will be made to make use of the idea, either by the organization itself or in connection with the use of the system by some other tradebody.

The other big topic before the association was accident prevention, with special reference to the use of signs and symbols for this purpose. Opinion was considerably divided regarding the advisability of using signs at all, some members of the association taking the ground that the use of numerous signs in their mills would lead visitors to believe that the danger was excessive, whereas, it was pointed out, most of the accidents reported are not due to the use of machinery, but to carelessness in going about the building. Another phase of the subject was that in many mills the operatives cannot speak English, and to be effective the signs would have to be printed in several languages, which hardly seemed to be practicable. The question of whether the signs should be general or specific in their terms, and if the latter, how the wording should be arranged so as

to come within the compass of a sign, was also taken up, and it was realized that the proposition was not altogether simple.

The suggestion was made that the compilation of a book of instructions for employees, covering accident prevention and other general matter, with the idea of requiring all of the hands to read it, was brought forward, and met with approval. A representative of a metal sign manufacturing company, invited to be present for the purpose, explained the facilities of his concern for producing signs of the sort needed, and it was decided to appoint a committee to consider getting up an instruction book and also the wording for the signs which would be needed in the various departments.

Members of the committee were chosen as follows: C. N. Brown, Lincoln Cotton Mills, Evansville, Ind.; E. S. Hobbs, Aurora (Ill.) Cotton Mills; P. S. Tuley, Louisville (Ky.) Cotton Mills Company; Charles T. Wolfe, Puritan Cordage Mills, Louisville, and R. A. Cochran, of the January & Wood Company, Maysville, Ky. This committee will report at the meeting to be held in Louisville in July.

A feature of the discussion of accident prevention was the fact that the ladies present, the wives and daughters of the members, attended the afternoon session of the association, when this subject was given attention. They showed keen interest and considerable knowledge of the details of the proposition. Mrs. Lee Rodman, among others, made an interesting suggestion that the wording of the signs used be changed from time to time, her idea being that employees become accustomed to them and that the signs lose their force. In the Indiana Cotton Mills, for instance, "Safety First" has become so familiar that it no longer impresses, and the slogan which is now being used is, "Be careful!"

A letter from the Federal Trade Commission at Washington, asking for the names of members engaged in export trade, and suggesting that the commission is considering the advisability of combinations for the purpose of developing it, was read by the secretary. This suggestion of a more liberal attitude, it was pointed out, is in striking contrast with the position taken by Joseph M. Davies, a member of the commission, with regard to uniform cost systems by manufacturers, as he has declared in official reports that their use in most cases is for the purpose of developing price agreements, and they should be restricted accordingly.

The future of the cotton market was discussed, and it was agreed that it is uncertain, the war and various phases growing out of it being the factors of most importance. In this connection it was brought out that some of the mills which are members of the association do not report their consumption to the Government by the month, as requested, but for periods of four weeks at a time. When a fifth week is included, as when the end of the month falls on Saturday, the apparent consumption is made to appear much greater than it really is, and these differences are made the basis for market manipulations by cotton speculators, it was declared. Members were urged to be more careful in this respect, and to include the full number of days in their reports on consumption.

Another government report question taken up was how to handle the element of depreciation in making reports for income tax purposes. The government, it developed, has not laid down any hard and fast rule, but requires that a reasonable amount should be charged off. The factor of obsolescence is an important one, but apparently cannot be used as part of the general depreciation charge, but must be indicated separately. Neither is the plan of making depreciation charges heavy or light, according to whether the profits for the year will stand it, acceptable to the government, the experience of members showed, and it was therefore suggested that an annual charge be made. Most of those present were charging off from 5 to 8 per cent on their equipment, this not including obsolescence.

An Import Company Organized.

To facilitate imports of dyestuffs of German origin, there has been organized under the laws of the state of New York, an import company to be known as the Republic Trading Corporation, which will receive and distribute to the several importers any consignments of dyestuffs which the German Government allows out during the war and which may be permitted through the lines under the present ruling of the British Order in Council, which provides for the passage of two cargoes. William A. Mitchell, who is named as distributor in this ruling, has executed a waiver in the new company's favor, and the several textile associations affiliated with and members of the Textile Alliance, have similarly executed waivers which are to be placed on file with the Department of Commerce in Washington. Application is being made to the British Foreign Office to accept this substitution and soon as this is accomplished the matter will be presented to the German producers that they may apply to the German Government at Berlin for an allotment for export with the least possible delay.—*Dyestuffs.*

WALTER E. HARDY, who for the past five years has been connected with Marshall Field & Company, Wholesale, in advertising work, has associated himself with Roy D. Mock, formerly vice-president of one of Chicago's well known advertising agencies. Their business will be conducted along the lines of giving advertising service and counsel to manufacturers and distributors.

Mr. Hardy's long experience in the dry goods field has given him a merchandising experience that will naturally lead him to devote the major part of his activity to marketing products that are sold largely through dry goods and department stores.

The idea of business counselors is a comparatively new departure in merchandising, and manufacturers during the last few years have found that it is to their advantage to have the privilege of consulting men of large experience in marketing products of many kinds. It is the purpose of Mock & Hardy to develop this phase of their business in particular and the accounts which they have secured since the firm was organized, indicate that their business is going to take this trend.

The offices of the new concern are located in the Harris Trust Building, Chicago.

"It seems to me that the man who tills the land and makes it useful has a better right to it than he who has merely inherited it."

Southern Textile Convention and Exhibit

Even the weather man cooperated. Good weather was one of the essential requisites to an entirely successful convention and exposition that could not be absolutely arranged for by the executive committee in charge. However, by some connivance with the weather man, the committee had him select the five most perfect days in 1915 and arrange them side by side for use from November 2nd to 6th.

Promptly at 9:30 o'clock Tuesday morning, to the accompaniment of brass band music and shrieking mill whistles, Mayor C. S. Webb, of Greenville, pushed the button that started into motion the machinery in the first textile machinery show ever held in the South. In his opening address Mayor Webb heartily welcomed the visitors and exhibitors and spoke optimistically of the South's future prospects along textile lines. Governor Richard I. Manning, of South Carolina, was unable to be present, but he spoke his greetings over the long-distance telephone and these were read to the assembled mass of people. Governor Manning said:

"I appreciate your efforts in such an undertaking and hope that it will endure to the lasting good of this commonwealth, and to the accomplishment of great things. The occasion will be of interest and bring about an understanding and experience which will strengthen our weak points. I wish I could be with you in the discussion of those matters that are of such importance to our people, but as I cannot be with you, and that you will know I prize the invitation, I speak my cooperation in an industry so important to the lives of every man, woman and child of our state.

"In this ambition and by these efforts will come great results. The efficiency and the education of trained minds as well as hands will make us better in competition, and this in turn will produce more money, encourage stronger efforts in our lives, and will in time build up a splendid citizenship and better develop manhood and womanhood. I wish you Godspeed in your commendable endeavor."

As announced in the program, this first day was known as

Presidents' and Treasurers' Day.

Because of this a large number of mill officials were present in Greenville and in attendance at the exposition. Another feature that called many mill officials out was the meeting of the Board of Governors of the American Cotton Manufacturers' Association at the Poinsett Club at noon on Tuesday. This meeting was primarily to determine on the next meeting place of the association. Letters urgently requesting the association to meet in New York, Birmingham, San Francisco, Saratoga, Atlantic City, Galveston, Cincinnati, Richmond, and Atlanta were read and delegations from three cities were present to urge the association to meet in their city. After due consideration the board voted unanimously to meet in Atlanta on Tuesday and Wednesday, April 4th and 5th, 1916. The following members of the board were present:

Scott Maxwell, president; T. H. Rennie, R. M. Miller, Jr., S. B. Tanner, Lewis W. Parker, D. Y. Cooper, E. A. Smyth, Stuart W. Cramer, Fuller E. Callaway, John Law, C. B. Armstrong, Eugene Holt, George H. Lanier, James D. Hammett, Caesar Cone, Leroy Springs, George S. Spofford, Craig Mitchell and C. B. Bryant, secretary.

Wednesday, November 3rd was known as

College Day.

and at the invitation of the executive committee, students from all southern colleges interested in technical or mechanical courses were present. Large bodies of them spending practically at entire day at the exhibit. In the afternoon a football game was included in the program and played at Mill's Park.

At 9:30 o'clock in the evening the first complimentary ball to the exposition visitors opened at Cleveland Hall. Cleveland Hall contains probably the finest dancing floor in Greenville and is leased annually by the Cotillion Club of that city. Music was furnished by the First Regiment Band, N. G. S. C., and dancing and refreshments were enjoyed until midnight.

Thursday was the first

Southern Textile Association Day.

While the time for opening the first session was scheduled for 12 o'clock, the attractions of the exhibit proved so great that it was well after this hour before President W. M. Sherard called the meeting to order. Rev. Geo. W. Quick, of Greenville, pronounced the invocation and President Sherard then introduced Mayor Webb, of Greenville, to welcome the delegates on behalf of the city. Mayor Webb spoke briefly, outlining the wonderful advantages of Greenville as a cotton manufacturing center and assuring his hearers that Greenville was behind the splendid machinery exhibit which had been developed and that they wanted to keep it and would do everything in their power to secure it in the future.

Capt. Ellison A. Smyth was then introduced by President Sherard as one of the leading cotton manufacturers

Photos by Merrell.

SOME OF THOSE PRESENT. FIND YOUR FRIENDS.

of the South and one who had been largely instrumental in building up the industry in South Carolina. Captain Smyth is also a past president of the American Cotton Manufacturers' Association and president of the South Carolina Cotton Manufacturers' Association, and in this latter capacity it was exceptionally fitting that he should be selected to welcome his brother cotton manufacturers to the city of Greenville. Captain Smyth said:

"His Honor, Mayor Webb, has asked me to supplement the address officially given by him as Mayor of Greenville, with a word of welcome as president of the Cotton Manufacturers' Association of South Carolina and as a life member of your association. I gladly add a word of cordial welcome, and trust your meeting in Greenville will be most agreeable in every way, and that you will carry with you when you leave us pleasant and delightful recollections of the Pearl of the Piedmont.

"Greenville appreciates very much the honor you have paid her in selecting this city in which to hold your meeting, and also for this great Textile Exposition now open here. Greenville is essentially a cotton mill town, and its wonderful growth during the past few years has been due largely to the foresight and liberality of its citizens who, from civic pride and with far-sighted judgment, have contributed large and small amounts to the establishment of so many cotton mills around our suburbs. These subscriptions were made not so much in expectation of returns in dividends, but from a desire to aid in the building up of their home town. The fact that the pay-roll of these cotton mills amounts to three million dollars per annum has enabled Greenville to weather the financial storm of the past year with perfect comfort and absolute security. It is fitting that the first great Textile Exposition in the southern states should be held in the center of the textile industry, and Greenville, with a keen appreciation of this honor, welcomes you, and trusts that this visit is only one of several to come in the future."

In response to the words of welcome State Senator A. M. Dixon, of Gastonia, N. C., was called upon and delivered a most eloquent address. Senator Dixon dwelt upon the permanency of the organization and spoke in part as follows:

"In behalf of the membership of the Southern Textile Association, I desire to express our deep appreciation at the warm welcome extended us today. We are glad to meet in the great state of South Carolina, a state that has produced Marion, Rutledge, Pinkney, Hayne, Calhoun, Hampton, Manning and other distinguished sons whose names are synonymous with the greatness of this commonwealth. We are glad to meet in the city of Greenville, a city which is admitted by all, with the possible exception of a few citizens of Spartanburg, as being the premier city of the Palmetto State.

"We of the South are accustomed upon our Memorial Day to gather together and do honor and reverence to those brave men who for four long years waged a war that challenged the admiration of the civilized world. We meet upon those occasions not only to do honor to those who have pased away, but also to reverence to those who remain. While the war between the states has settled the question of secession, the sons and grandsons of these men are today waging a war. It is true that they are not fighting on the bloody field of battle. However, they are fighting a battle for commercial life. They are waging a war against the forces of disease and for better sanitation. They are waging a war against the forces of illiteracy and for education. In order that they may successfully do so, some of them have organized under the name of the Southern Textile Association. Today the splendid membership this organization has, is sufficient evidence that it has become an important factor in southern textile development."

Lieut. Gov. A. J. Bethea, who was to be present, representing Governor Manning, of the state of South Carolina and to deliver an address of welcome in behalf of the state, was somewhat delayed by official duties and did not arrive in the hall until just at the conclusion of Senator Dixon's remarks. Mr. Bethea was then introduced and gave the members of the association a generous welcome in behalf of the state, saying that he believed that those who had seen what had been developed at the exhibit would claim that Greenville was the head and brains of South Carolina. He said he had but one criticism to make, which was that the members of the cotton mill industry had failed to give it the importance it deserved in the eyes of the general public. An industry which has done, perhaps, more than all others combined to increase the wealth and happiness of the citizens of the state should, he said, be better known and more widely recognized than it is today. He believed that such occasions as the present would serve to teach the outside world, as well as the state's own citizens, what has been done by the captains of industry in the cotton mill field. The meeting then adjourned.

The afternoon and the early hours of the evening were spent in examining the many machinery exhibits and at 9:30 o'clock the exhibitors, members of the association and visitors were tendered an informal reception at the Ottaray Hotel. After spending half or three-quarters of an hour getting acquainted with each other, the large dining room of the Ottaray was cleared and to the music of the Newberry Cotton Mills Band dancing and refreshments were enjoyed until 12:30.

Friday at 12 o'clock brought

The Second Session

of the association meeting and shortly after that hour, with a large attendance present, President Sherard arose and opened the meeting.

It was particularly appropriate that this first Southern Textile Exposition should be held at such a time as to allow President Sherard to be the presiding officer. For several years past he has been chairman of a special committee whose entire duty was to bring the Textile Exhibitors' Association of Boston and their big show to some city in the South. He has worked strenuously toward this end, and when it finally became certain that they would be unable to come in 1915, steps were taken by local people in Greenville with the aid and support of a few outsiders, to form and operate a textile show under the auspices of the association. It was, therefore, only fitting that President Sherard should enjoy the fruits of his labors and preside at the meeting held during the South's first textile show. The first business of the program was the reading of the President's address, which was an intelligent review of the mill situation in the South and contained a number of suggestions and warnings. He spoke in part as follows:

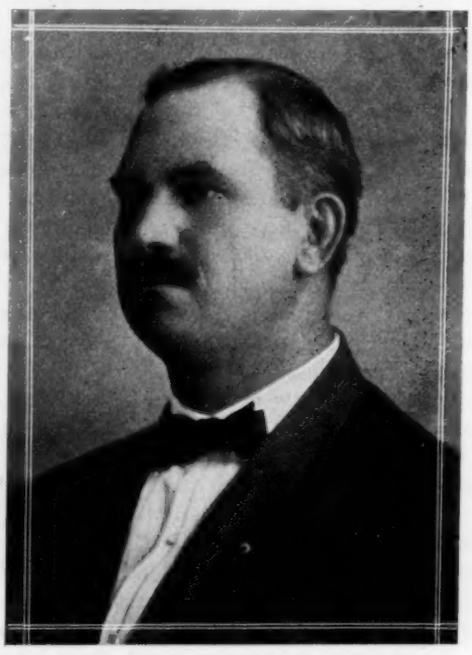
The President's Address.

"In assuming for the first time the duties of presiding officer of this association, I wish to express again my sincere appreciation of the honor you have done me in naming me your president. I know of no body of men engaged in any line of business who are in a position to accomplish more in the way of substantial progress and moral up-lift than the Southern Textile Association, and I esteem it a rare privilege to have been chosen head of this great organization and to contribute some share to the splendid work it is doing.

"Our association, as it gathers strength and experience from year to year, is in a position more and more to do valuable constructive work, which should center in the main about two great ideas; first, the increase of efficiency among our co-workers in the mills; second, a general movement of up-lift such as is done in welfare work and similar agencies. Increased efficiency can not well be brought about without some effort made at the same time to stir to vigorous life the community spirit through welfare work, and there can be no material progress in the simple economics and hygiene of the house and home without at the same time promoting the efficiency of the employee. The point I desire to make is that the two ideas go together, and so closely akin are they that one cannot be attempted with the hope of the best results without bringing in the other.

"No cotton mill of any size could possibly make a mistake, in my judgment, by employing a first-class supervisor of welfare work to teach household economy, better ways of sanitation, the value of winter gardens, and all the other methods that have proven by the test of common sense and experience valuable aids in preventing waste and in promoting the health, wealth and happiness of the community.

"Everywhere, in practical attempts to improve conditions, what is termed the 'community spirit' lies at the very bottom of all success. When a community is once aroused and interested in the activities of these welfare organizations, the people are brought together upon terms of closer intimacy; petty differences are removed; a generous rivalry is created, which stirs to action the best impulses and desires of old and young; the cause of education is stimulated; savings accounts are started; homes are made happier; sanitary conditions are improved; waste is prevented; and all in all, every person connected with the mill, from the doffer boy to the president, becomes a more efficient and a more contented worker. Community work of this sort long ago passed the experimental stage. It is a pronounced success where it is managed by leaders who are capable and who



PRESIDENT W. M. SHERARD.

have a real bond of sympathy and interest with those with whom they labor.

"But, inefficiently managed or conducted without a feeling of sympathy between leader and pupil, the money spent on it is worse than wasted. To accomplish results worth while, the superintendent and his assistant should be vitally concerned in its success, and, if they will do their full duty in a spirit of ungrudging service, the results obtained will repay them a hundredfold for the time and the thought they give it.

"At this time I will not touch upon particular ways and means of raising the efficiency of those who work for us and with us, because the proper treatment of a subject so vital to the success of all business, from the smallest shop to the largest manufacturing enterprise in the land, would

involve an endless discussion of method and system; but I firmly believe that the first step in the direction of general efficiency is to be found in the welfare work of which I have already spoken.

"The business of cotton manufacturing, as it effects the interests of both operative and owner, has been unduly disturbed in recent years by impractical social reformers and selfish agitators. The southern mills have been the target of abuse for well-meaning but misguided people who make flying trips in Pullman cars to our section and get all their information second-hand. Much hurtful misrepresentation, as a result, has found its way into the public prints, and the southern mills have had to stand indicted before the world for offenses they have never dreamed of committing. In many instances these so-called reformers and agitators have been selected frbm among that class of people who have an elastic conscience—one that will stretch to suit their particular work—that of misrepresenting the actual conditions existing among the manufacturing enterprises of this section of country. Most of these attacks upon the mills have had as their excuse so-called violations of child labor laws. There is no disposition among mill workers and employers in the South to break the statutes governing child labor or any other statute for that matter, and I believe that you could rake our southern cotton manufacturing states with the fine comb of the law and you could hardly find a responsible mill man, having the welfare of the mill people honestly at heart, who would of his own volition employ a child of tender years under the age limit fixed by law. Conditions are such that children between the ages of twelve and fifteen years are employed by the mills, not because they prefer their labor, but for the protection and welfare of the children themselves. I hope to see conditions speedily change. I hope to see the day come when there will be no children under fifteen years of age in the mills or any other kind of manufacturing establishment, for child labor is certainly not cheap labor as the professional meddlers would have the public believe, and these children ought to be receiving, in good public schools provided for them, the training and experience they need for their life work. All lasting reforms must be preceded by common sense. It is easy enough to put the horse before the cart, but the resulting motion will be backward instead of forward. When compulsory education becomes general over the southern manufacturing states, and above all is enforced sensibly and uniformly, then it will be the right and propor thing to raise the age limit by legislation. But, I repeat, until we are ready for it—until the soil has been prepared for the seed by giving the children adequate schools and making them attend—it would be the height of human folly to turn them out of doors where many of them would certainly fall victims of idleness and crime.

"In this connection, I think it is worth while to call the attention of the association to the Palmer bill now pending before the senate of the United States. Last year it passed the lower house of congress by a large majority. It has strong and influential backers, men and women of undoubted ability and resourcefulness, and the bill will become a law unless our southern representatives are urged to get busy and present to their fellow members in the national legislative body the real conditions.

"For some states, the Palmer bill, if enacted into law, should prove a very wise piece of legislation. For other states, especially in the South where compulsory education has either not been adopted or is loosely enforced, it cannot but injure the child it seeks to help.

"That an 'idle brain is the devil's workshop' has always been true enough, but it applies with startling force to any community like a city or industrial center where thousands of people live close together and where all idle children are under a natural temptation to band themselves together for purposes of mischief, innocent or malicious. The wise and sensible course, it seems to me, would be to make our fight for better state laws for the good of the child, and, when that battle is won, then will be the time for uniform legislation by federal action.

"We are bound to admit that the percentage of illiteracy in our mill population, among children and adults, is larger than we like to believe, as it is in many other elements of our general population. In justice to the mills, the real cause of this illiteracy it must be emphasized, goes back to the rural communities of a former generation, and to some in the present, in which the public schools were sadly neglected. Educational progress in mill communities has, relatively, within the past few years, been more substantial than it has in the average rural district. The great task that lies before us is to continue what has been so well begun, and I think you will agree with me that reform and relief must come, not by outside interferences or by legislation such as is propoesd prematurely in the Palmer act, but by compulsory education laws by our states to meet our own particular needs.

"The Southern Textile Association has within its membership the power to accomplish boundless good in building up the weak places in the business, civic and social life of mill communities. Experience is a fine teacher, and we ought here to exchange the ideas we have found to be good and sound and progressive by having tried them out.

"In spite of the financial depression of the past year, we have not lost sight of the necessity of keeping progress as the watchword of all mill enterprise and endeavor, and, as the clouds show signs of breaking and clearing away, the future will certainly bring to each and all of us wider opportunities for building upon a more lasting foundation."

The next paper on the program was entitled

Points on Fine Yarn Manufacture

by C. N. Poore of the Louisville (Kentucky) Cotton Mills.

Mr. Poore, who has had much experience along this line, was thoroughly at home with his subject and spoke as follows:

"In the discussion of this subject it must be understood from the beginning that there are local conditions, peculiar to the layout of each individual spinning plant, which would preclude the successful duplication of methods, practices and results of another plant; and while it is certainly helpful to be guided by methods of successful manufacturers, we must have due regard for our own peculiar conditions and not accept offhand the methods of another for our own. Even where conditions are very much the same we find considerable variance in the procedure of different manufacturers to arrive at the same results.

"It is a realization of this particular fact that prompts me to mention as the first essential point in the manufacture of this product—a fair degree of diligence and self-confidence on the part of those who have this work under their supervision.

"There seem to be several right and innumerable wrong ways to manufacture fine yarns, and if we approach the problem in a confident manner we may feel assured of a certain degree of success. Since the cotton is usually the salve we apply to our conscience, when we have gotten a little stale and things are going rather badly, the staple may properly be taken as a point of first importance and deserving a little emphasis.

"Shippers of cotton find it just about as hard to deliver every bale of cotton alike, as we do to deliver every thread alike. It is therefore necessary, in order to get the best results, that we learn as much about cotton as we have opportunity to learn, so that as we put it into process we may select our mixes to the best advantage. It is better to staple the bales closely and run them through according to length, although the difference may not be great, than to take the bales as they come from the warehouse. Where a variance of half a grade or more exists, the lower grades may to advantage be run through the preparatory cleaning machines separately and afterwards blended on the finisher with higher grades. This method will result in a cleaner finished lap than were these grades mixed on the floor, because in going through the preparatory machines some of the impurities freed from the lower grades find lodgment in the higher grades and are carried through to the finished work.

"In preparing laps for fine yarns, it is desirable to give the cotton just enough beatings to open it up from its matted condition. A good method is, after first putting through blowing system and automatic feeder, to pass through a buckeye style cylinder and finish through a carding beater. With this method the leaf is not pulverized and is more readily cleaned out by the lickerin of the card.

"A word may be said here regarding the settings of carding beaters and lickerins. It is highly desirable to have this setting just close enough so as not to strike; ⅛ inch for the beater and 10-1000 gauge for the lickerin and mote knives. Good results are thereby obtained and the stock is not damaged, unless a very thick lap is permitted, which is undesirable. There seems to be no reasonable cause for varying these settings for change in length of staple. The card draft for this class of work should be from 125 to 150.

"To have clean work, the half lap and top comb of the combers must be kept in good condition by keeping the brush set up, so as to prevent the accumulation of waste on half laps, which destroys the needles and causes poor

VICE-PRESIDENT F. E. HEYMER.

work, and it is not good economy to put off re-needling until imperfect work is noticeable.

"Probably the hardest problem in fine yarn manufacture is the prevention and elimination of slubs and slugs. These may be classified in the following manner: slubs are thick places in the stock proper; while slugs may be considered as bunches of fly and waste which are caught up by the ends in their passage through the different processes. If permitted to go out in the finished yarn a great deal of trouble is caused by breakage in knitting machines, or such other process as the yarns may be further subject to.

"The most prolific source of the slub in the stock is top rollers and piecings of the ends. Too many leather rollers are kept running on roving machines after they have become so hollowed out that they fail to perform their proper function when a piecing from the preceding process

comes under their action. It is not economy to get along with as little roller covering as possible, but on the contrary to keep them in the very best possible condition by taking them out just before they begin to produce imperfect work.

"Slugs of the fly get into the product in numerous ways, but the top clearers are no doubt the greatest offenders. Frequent pickings of the clearers alone will not eliminate these slugs, since small particles still adhere to the clearer and drop into the work. When the clearers are cleaned they should be cleaned thoroughly for best results. In wiping off creels, thread boards and roller beams, the brush or waste used for cleaning must not be permitted to touch the twisting thread or roving, else innumerable slugs will be caught up and twisted into the product. This is especially true in cleaning the front of the spinning frames. In spite of due care and watchfulness there remain in the product numerous slubs and slugs, or bunches, which must be removed at the winders and spoolers. The guides at this point must be closely and carefully set, and require frequent resetting in order to do efficient work.

"It has been said that we should not attempt to make our spoolers do the work of our cards, which is true in a sense; but I pity the man who opens up his spooler or winder guides and depends on the cards to take out the imperfections caused. On later processes, I have found the spooler and winder guides very effective as eliminators of trouble. In particular cases, where warps free from slubs are required, it is customary for the tender to stop the machine and break the slubs out as they are detected.

"In all cases where high grade yarns for twisting are required, it is desirable that weaver's knots be tied in winding. There is some difficulty at first in starting this system, but the help soon becomes very skillful and the results more than repay the time and trouble of adopting the system.

"A final word on a point which does not usually receive the attention its relative importance demands, and that is air conditioning and control. Too often this equipment is treated as if it was not necessary. Yet I know of no one particular point in the manufacture of a fine yarn that will so quickly give a return on the time and trouble spent in getting an intelligent grasp of its relation to our problems than of proper atmospheric conditions. To determine just what these proper conditions are requires some thought and perhaps some experiments, but when once determined and maintained we have a very noticeable improvement and a superior product.

"When the last word is said, it remains that in the manufacture of fine yarns, or high grade yarns, we must consider very carefully every process and condition in its proper relation to all others, and when we do that no doubt we shall find that considerable improvement in our product will have been accomplished.

"Much might be said regarding the details of speeds, drafts, twists and adjustments of machines at each process for the different kinds of cotton and to meet unusual conditions, but it seems hardly possible to treat those points intelligently in this paper, without considerable sacrifice of brevity. Some latitude is permissible, of course, in those details, but for best results we must stay within fairly well understood limits, and use our best judgment to determine the exact arrangement best suited to the particular stock and conditions. Although it is very often done, it seems to me unwise to go to the extreme in any one direction, as almost invariably the result of such a course will prove detrimental in the long run."

Mr. Poore was followed on the program by Geo. Harrison of the Parker Cotton Mills Co., Greenville, who was scheduled to read a paper on

Causes of Weave Room Inefficiency

Mr. Harrison briefly outlined the various problems in the mills, and took up the question of organization and pointed out the necessity for loyalty and cooperation in all the departments of the mill. He said, in part:

"The weave room, as we know, is the 'catch-all' for all defects or troubles that the mill is heir to. We want to discuss this subject from the standpoint of inefficiency.

"In the weave room there are three main branches: First, organization; second, slashing and humidifying; third, yarn made by the spinning room.

"The great trouble in our organizations of the mills today is their lack of business principles and methods. Our mill presidents, treasurers and superintendents (particularly the last named) do not lay sufficient stress upon handing the order on to the man next subordinate to him. He is just as apt to give his instructions to the second-hand or loom fixer as he is to the overseer. The overseer, in turn, is just as likely to instruct his weaver, day laborer or loom fixer as the second hand. Instructions coming from subordinate to superior rather than from superior to subordinate are more than apt to create friction and this is bad policy.

"Cotton milling is slightly different in the requirements of its help from most any other industry. In the cotton mill we have section men, loom fixers, oilers, weavers, spinners and day laborers, who do one specific job. As an instance, in the average case if the weaver gets behind or gets his work torn up, nine cases out of ten, the loom fixer will not help him get in shape. This is a deplorable defect in the organization.

"The next thing of importance in the inefficiency of the weave room is the conditioning of the yarn. For argument's sake we will suppose for the time being that the yarn is in perfect condition when it leaves the warper. This being true, we commonly think that if you size it right you will have no trouble. My friends, this is a great mistake. Size as you will, unless you have the proper humidity in your room it is impossible to make it weave in an efficient man-

ner. There are numerous patented devices for indicating humidity. It is useless for me to discuss this further, but will answer the question, 'How can we tell when the humidity is right, having none of these patented appliances?' This is very simple, as we know that if the warp threads mat up or take spells of breaking throughout the day they have broken at the time when the humidity was too low, knowing from past experience that the thread will not stand the strain without humidity that it will under proper humidifying conditions. The indication of too much humidity is the boxes sticking up and the looms slamming off from inapparent causes.

"Slashing is where most of our weavers today remind you of backwoods country doctors. We all know that every weaver has some slashing idea that it is impossible to get out of his head. To illustrate my point, suppose we have a weaver on 72 x 76 4.00 yard goods. The mill is running in apple-pie order. We change this man to a mill on 48 squares, and, my friends, almost invariably he will want to use the same size, compound, starch and mixture that he used on 72 x 76, and if this man was watched and allowed his way you would find him 10 or 20 years after using exactly the same combination that he was taught in his initial overseeing.

'There is only one point that I care to emphasize here and that is a reason for variation in building size. This is largely dependent upon the distance from the boiler room to the size pot and the exposure of the pipe connecting the same. In case this pipe is 1,000 feet long and not properly covered the condensation is much greater than a pipe 200 feet long covered with 1-inch coating of asbestos. In the latter case you will practically get a dry steam and your size will boil much harder and will tend to decrease itself by vaporizing rather than increasing itself by having condensed water blown in from the steam pipe.

"As aforesaid, the weave room is unfairly the 'dumping ground' of all complaints against the mill whereas a fair percentage of these rightly belong to the carding and spinning rooms. For instance, having no stop-motion the thread breaks, mats up and makes an overshot. This in most cases can be attributed to three causes: improper slashing, lack of humidity, or defect in the yarn.

"I would say that 50 per cent of the chances are that it was caused by defect in the yarn rather than either of the other two, most likely a thick or thin place. The thick or thin place defect is very serious, as we know if it is thick the reed hampers it in going through, and is more than apt to knock it in two. If it is a thin place it is more readily chafed and rubbed in two.

"In conclusion let me summarize as follows: A strong organization is necessary, and if your next subordinate is not adaptable to this look around and get one who is. Don't let the load of the man next below you break your neck.

"Pay close attention to the humidifying system, not trying to run it at a full tilt on a warm rainy day, or run it half-way on a windy day.

"Get the starch and compound best suited to your particular and present requirements regardless of what you used before or on some other class of goods.

"See that the carder and spinner are informed if they are not giving you the good yarn that you should have."

At the conclusion of his remarks Mr. Harrison requested members present to ask any questions regarding problems in their own specific plants, stating that while probably he could not answer them himself, he thought there were those present who might be able to offer a solution. This brought out considerable discussion on the part of a number of members present.

Textile Exhibit Educational.

President Sherard then called upon Frederick H. Bishop, secretary of the Universal Winding Co., Boston, and president of the Textile Exhibitors Association of Boston, to express his opinion about the textile exhibit and the way in which it was being operated. Mr. Bishop spoke in part as follows:

"I commend your judgment, and I compliment your organization, and the committee on the wonderfully fine and effective work they have done. I speak from experience in this matter when I say that it is no small amount of work to get together a representative exhibition that illustrates so many phases of the mechanical department of mill practice, and I think you have done wonderfully well in this work. You have a great opportunity here to continue this work along definite lines, the plan or method of which of course is entirely your matter.

"There is one phase of this matter that you all now appreciate more than you did before the opening of this exposition, and that is, the educational side of these exhibitions. We should take part in them as exhibitors of course, primarily for the financial result and consider it good advertising, but beyond that we must remember that we are factors in placing before the practical men, who are really the root and foundation of the cotton industry, and place before them the best, the newest and most improved machinery and apparatus applicable to the manufacture of cotton into yarn or cloth, and in such form that a man in two or three days observation can gain more practical information than he could inside of any of your best mills in the same number of years. That fact alone ought to convince you, and doubtless has, that you should make a permanent matter of this exhibition. I am considered by some of my friends in the North as a crank on this subject, because I have enthused so much over it, but I am glad to say that I have finally been fully justified, because of the success of our textile exhibitions in the North, and I am quite sure that you will be equally justified in carrying on the work here. Just at this particular time, this

educational work, not only in this line, but in others, is to my mind exactly what the southern mills need most of anything.

"I had the pleasure of visiting Clemson College, a pleasure in one way and a regret in another. A regret that the owners of the southern mills have not seen fit to send more young men there to acquire a practical education, to fit them for the great work you have in the mills in building up this industry. You cannot rely altogether upon the development of the bobbin boy. You cannot always rely upon the creation of the best quality and the most scientific knowledge by the growth and development of your operatives. With the natural advantages the South has at present in the development of its cotton industry, you should have intelligent as well as practical people in charge of departments. You need educated men, men trained in the textile schools, and I commend to this association a consideration of that fact, and I further suggest that you encourage all young men, students and others that you can get hold of, to visit your exposition without charge. We have freely extended invitations to all of the textile schools in and around Boston, the technological schools, the senior classes of the high schools, and you would be surprised at the interest those young men show in these practical demonstrations. I want to emphasize the educational side of this exposition. What is shown there will commend itself to your attention if it is something that you need, but this organization can do a great work by standing back of your textile schools and influencing the owners and proprietors of mills to send young men there who will finally come back better equipped and with a better relationship toward their employer."

Robert F. Bowe, chairman of the Board of Governors and chairman of the Executive Committee of the Southern Textile Exposition, reported that the officers of the association had made application for a charter for the Southern Textile Exhibitors' Association and that arrangements would be made whereby a building could be secured for permanent exhibition purposes. This report was approved and the committee given authority to work out its plans.

Senator Dixon of Gastonia then took the floor, and in a happy presentation speech presented a handsome leather covered rocking chair to M. G. Stone, the general superintendent of the Pacolet Mills and a past president of the association.

The next business in order was the selection of a meeting place for the June, 1916, convention. Invitations had been received from a number of cities, but in the ballot for the selection of a place, Asheville, N. C., was selected by a majority of forty-seven. The meeting then adjourned.

On Friday night at 9:30 the last complimentary ball to exposition visitors was opened in Cleveland hall with music by the Newberry Cotton Mills band. The excellent floor was again crowded with dancers who enjoyed the music and refreshments until a late hour.

Saturday's Session.

The final session of the convention held on Saturday, had one chief item on the program. This was an address on

National Labor Legislation

by Congressman J. F. Byrnes of South Carolina. Congressman Byrnes dwelt extensively on the Palmer-Owen Child Labor bill and its effect upon the cotton mill industry in the South and commented very highly upon the presentation of the matter before the congressional committee by Lewis W. Parker and other South Carolina manufacturers who appeared in behalf of the industry. Mr. Byrnes presented a very strong plea against the enactment of the Palmer bill into law and spoke in part as follows:

"This bill provides:

" 'That it shall be unlawful for any producer, manufacturer or dealer to ship or deliver for shipment in interstate commerce the products of any mine or quarry which have been produced, in whole or in part, by the labor of children under the age of 16 years, or the products of any mill, cannery, workshop, factory, or manufacturing establishment which have been produced, in whole or in part, by the labor of children under the age 14 years, or by the labor of children between the age of 14 years and 16 years who work more than 8 hours in any one day, or more than six days in any week, or after the hours of 7 p. m. or before the hours of 7 a. m. * * * * * * That for the purpose of securing proper enforcement of this act the Secretary of labor, or any person duly authorized by him, shall have authority to enter and inspect at any time mines, quarries, mills, canneries, workshops, factories, and manufacturing establishments in which goods are produced for interstate commerce.'

"I shall not read the other sections of the bill as they refer solely to the administration of the proposed law.

"The language of the bill makes plain its object to have the Congress of the United States regulate the ages of employees and the hours of employment in the states of the union. While it ostensibly prohibits the employment of children under 14 years of age, the effect of the bill is to absolutely prohibit the employment of children under 16 years of age. Similar bills have been pending in the Congress for a number of years, but it was not until this last session that any of them received serious consideration.

"The fact that the Palmer bill passed the house by a vote of 233 to 43 justifies us in seriously considering the bill and its effects. It is argued by some who urge its passage that the employment by southern cotton mills of children under the age mentioned in the bill means cheaper labor for these mills, and that it is unfair to allow their products to be transported in interstate commerce in competition with mills of other states, where children under the ages named are not allowed to work. A still greater number of well meaning persons who have unfortunately given credence to the misleading reports made by McKelway and others, of conditions in southern cotton mills, believe that in the interest of humanity they should do whatever is possible to prevent the oppression of children, and are ready and anxious to urge the enactment by Congress of any measure that seeks to remedy what they consider an evil, regardless

of whether or not Congress has the power under the constitution to apply the remedy. When we consider the ignorance of the average man as to labor conditions in a state distant from his home, we can readily understand how he can be misled by the misrepresentations of sensational investigators, who as a result of his sympathies having been excited feels it his duty to arouse national sentiment in favor of this legislation. And when we consider that thousands of such people, some prompted by mercenary, and others by humanitarian motives, have petitioned members of the United States Congress for the enactment of this legislation, we can understand the sentiment resulting in the large vote cast in its favor in the House of Representatives.

"Because of the imperfections in our educational system, I know that many of these children if prohibited from working in the mills would not be forced to go to school, and their discharge would be an injury instead of a benefit to them, but I believe the great majority of these would be sent to school, and if I were a member of the state legislature I would vote to prohibit the employment of all children under 14 years of age.

"I stated at the outset that the effect of this bill would be to prohibit the employment of children under 16 years of age. I say this because it provides that children between the ages of 14 and 16 shall be employed only during the hours specified in the bill, not exceeding in any case 8 hours a day. Any man acquainted with the operation of a cotton mill knows that it would be impossible in South Carolina, where the 60 hour week prevails, for a cotton mill to have some of its employees working 8 hours and others 10 or 11 hours. Because of the character of work at which persons between 14 and 16 years of age are generally employed, it is practically impossible, and as the mill would not reduce the hours of employment to 8 in order to suit the employees between the ages mentioned, it would result in the practical prohibition of the employment of children under 16 years of age.

"I know little about the conditions existing in other states, and would not express an opinion as to the advisability or inadvisability of employing children under 16 years of age in the industries of these states, but in this section it is undoubtedly true that a boy of 15 is done no great injury by being allowed to work. Certainly, when you know that under our educational laws he would not be forced to attend school, it would be unwise to prohibit him from working and throw him upon the streets to his own injury, and in many cases to the injury of a widowed mother with other children unable to earn a living.

"I have stated my views as to the object of this legislation so that there may be no misunderstanding as to my attitude. Some very good people, philanthropically disposed and convinced of the righteousness of the 'holier than thou' attitude they have adopted, attribute to all who are opposed to this legislation the cruel desire to oppress children in order to accumulate wealth. Very few cotton mills in the South have during the last ten years made any money, and as most of them are owned by northern capitalists, it is absurd to charge that the opponents of this legislation are inspired by the desire to enrich them. Child labor, instead of being cheap labor, is expensive labor, and I have yet to find one cotton mill superintendent in South Carolina who today encourages the employment of children under 14 years of age. On the contrary, they discourage it and I believe that it will be but a short time before it will be prohibited by the state. Should the state of South Carolina at the next session of its legislature prohibit the employment of children under 16 years of age, as this bill in effect would do, unwise though I believe it, I would not protest; but I do object and most earnestly protest against the United States Congress violating the the rights of the states and seeking indirectly to do that which it cannot do directly. I protest against it because I believe that it is unconstitutional: That Congress has no power to regulate hours of labor, and that to pass this bill would establish a precedent by which the power of Congress would be absolute over all the internal affairs of the state.

"The United States government is a government of delegated power, and all power not specifically delegated to it by the states, through the constitution, are reserved to the states. Now it is contended by those who seek the passage of this bill, that because a manufacturer contemplates the transportation in interstate commerce of the goods manufactured in a cotton mill in the state, that Congress through the powers conferred upon it by the interstate commerce clause of the constitution, can regulate the subjects named. The clause of the constitution under which this power is claimed, reads as follows:

" 'Congress shall have power to regulate commerce with foreign nations, among the several states, and with the Indian tribes.'

"The subject to be regulated among the states is commerce, and no interpretation, however broad, can include in the word commerce, the right to regulate labor and the hours of employment. Thomas Jefferson in one of his letters published after his death declared his belief that the day would come when this clause of the constitution would be used to destroy state lines and build up a strong government at Washington. Remarkable as was his foresight, I do not believe that he ever anticipated that even the most radical of the nationalists would attempt to force this construction now contended for.

"The supreme court of the United States, referring to the power of Congress to regulate interstate commerce, stated:

" 'When the commerce begins is determined, not by the character of the commodity, nor by the intention of the owner to transfer it to another state for sale, not by his preparation of it for transportation, but by its actual delivery to a common carrier for transporta-

tion or the actual commencement of its transfer to another state. At the same time the power and regulating authority of the state ceases and that of Congress attaches, * * * * * * neither the production or manufacture of articles or commodities which constitutes subjects of commerce, and which are intended for trade or traffic with citizens of other states, nor the preparation for their transportation from the state where produced or manufactured, prior to the commencement of the actual transfer or transmission thereof to another state, constitutes that interstate commerce which comes within the regulating power of congress.'

"It is difficult for me to understand how, in view of this plain language of the supreme court, this legislation can be considered constitutional. I know that it is the rule where due doubt exists as to the meaning of the language of the constitution that one can look to the object sought to be accomplished. However, a reading of the debates leading up to the framing of this particular clause shows that the framers of that instrument, fearing that obstructions would be placed upon the intercourse between the states, sought to assure the free transportation of commodities in interstate commerce. This legislation seeks to do exactly the opposite thing.

"If Congress can regulate labor in factories, under the interstate commerce clause, with just as much consistency it can regulate the hours of labor and ages of employees upon the farms, in the wheat fields, at the cotton fields, on the ground that the wheat or cotton is thereafter to be transported in interstate commerce or in foreign commerce. And certain it is that the self-appointed regulators of the morals of the nation would feel it their duty, once they had secured legislation, which in effect prohibits the employment of white children under 16 years of age in the cotton mills of the South, to go further and see to it that this Act was amended so as to prevent the employment of negro children under 16 who contribute to the cultivation and production of cotton in the fields: That this is not far-fetched is indicated by the statement of the head of the Children's Bureau, before the Labor Committee, when, in reply to a question by Mr. Palmer, she stated: 'I do not know that it would be a popular thing to say, but it is my opinion that children may be exploited on the farm as well.'

"If Congress can regulate the hours of labor of children under 16, it can regulate the labor of persons over 16, and as Congress has placed itself on record as favoring an 8 hour day law for government employees, should it not be urged upon Congress by the American Federation of Labor that legislation should be enacted preventing the trasportation in interstate commerce any commodity in the manufacture and production of which any persons have been employed for more than 8 hours a day? Unless this be done and a minimum wage law be established for the nation, this bill would fail to accomplish its object of abolishing unfair competition between the states.

"If Congress can say that a commodity cannot be transported in interstate commerce unless it is manufactured by persons of specified ages, can it not say that any commodity manufactured, cultivated or mined by any person of foreign birth unable to read or write shall be denied the privilege of interstate commerce, and thus solve the immigration problem and end the annual congressional fight upon what is known as the illiteracy provision of the Immigration bill?

"If Congress can say what kind of labor can be used in the manufacture of commodities, should it not say that no commodity shall be transported in interstate commerce if it has not been manufactured or cultivated by non union labor?

"In truth, would not the principle contended for in this bill confer upon Congress the power to regulate every industry and every laborer within the United States? Will it not mean the absolute obliteration of state lines and destruction of state government, conferring as it necessarily does, upon Congress the police power of enforcing the regulation of the industries of the nation?

"President Taft in his book on 'Popular Government' (62 Univ. Pa. Law Review 490) said of the Child Labor bill:

" 'It seeks indirectly, and by duress, to compel the states to pass a certain kind of legislation, that is completely within their discretion to enact or not.'

"That this is the view of nearly every man who has given thought to the subject, there can be no doubt. The platform of the republican party in Massachusetts this year declares in favor of a national law regulating child labor, but urges such an amendment to the constitution as would authorize Congress to enact such legislation.

"If, as the advocates of this bill urge, the commerce clause of the constitution as it exists today confers upon Congress the power to enact this legislation, manifestly, it would be useless to amend the constitution as the republican party of Massachusetts urges. This declaration is a recognition by them of the correctness of the position I take on this question. And yet we find in the democratic party men who are willing to forsake the principles for which they formerly stood in order to please some well disposed, but thoughtless people, who are entirely ignorant of the powers of the federal government. The author of this bill, Mr. Palmer, is quoted in the Congressional Record of February 18, 1915, as having said:

" 'I grant that 30, 40 or 50 years ago when trasportation facilities were not so adequate; when business between the states was not so common, it might have offended my own sense of the rights of the several states to urge this kind of legislation. But the times have changed and we must change with them.

"The object of this bill is to regulate child labor. If it is wrong in this day to work children under 14 and 16 years of age, it was wrong 30 years ago. And yet according to his own statement the bill proposed by him would have offended his ideas of the rights of states at that time. Any view that he might have held 30 years ago as to the rights of states must necessarily have been based upon the constitution and its specific reservation to the states of all

powers not delegated to the federal government. The constitution, in so far as it applies to this matter, has not been changed in the last 30 years, and yet Mr. Palmer's views have changed because of the increase of business and improved transportation facilities. One is forced to conclude that if the business between the states continues to increase and transportation facilities continue to improve, he will be willing to surrender to the federal government all of the rights and powers now exercised by the state governments.

"It may be asked why, if I believe this bill unconstitutional, I should argue with earnestness for its defeat in the legislative bodies, instead of relying upon the supreme court of the United States declaring it unconstitutional, should it ever be enacted into law. I believe it is the duty of the legislative body to defeat a bill that is clearly unconstitutional, instead of enacting it to please some thoughtless people and thus place upon the supreme court the burden of declaring it unconstitutional. This policy if followed by the legislative bodies of the states and by Congress can but bring the courts into disfavor with the people who will come to regard the courts as enemies of reform, and result in an increased demand for the recall of judges. Therefore, I earnestly oppose the enactment of this legislation by Congress, and trust that all who agree with me in the views I have expressed will urge them upon their senators and representatives in the hope that its defeat may be accomplished."

Upon the conclusion of this address a rising vote of thanks was tendered Mr. Byrnes for his efforts in behalf of sane legislation.

The Committee on Resolutions then presented its report and thanked all those people who had in any way assisted in making the machinery exhibition a success. This report was amended by T. B. Wallace, superintendent of the Dunean Mills and a past president of the association, the following resolution being added:

Resolved, further, that to commemorate the work of the Executive Committee, having in charge the first Southern Textile Exposition, an enlarged picture of each member of said committee be placed in the building which it is proposed to erect as a permanent home for the future meetings of the Southern Textile Exposition.

These resolutions were passed unanimously and the meeting then took final adjournment until next June.

The Machinery Exhibit.

It was very gratifying to those who had devoted so much time and hard work to making the exposition a success, to hear the complimentary remarks of the visitors when they entered the big exposition building and as they continued through room after room crowded with exhibits of all kinds. Compliments were handed out very freely, not only by those visiting the show, but also by the exhibitors themselves, many of whom had exhibited many times in previous shows either in Boston or at Philadelphia.

Much praise was given the direct managers of the exposition for the manner in which the thousand and one details were handled while the splendid lighting facilities afforded by the temporary equipment installed called forth the highest praise from everyone.

It is of interest to note that of the exhibitors showing their products at the exposition in Greenville 26 of these had at that time already taken space at the Boston exposition to be held at Mechanics Hall April 24th to 29th, 1916. Another interesting feature of this was the fact that 18 of these 26 exhibitors are members and stockholders in the Textile Exhibitors Association of Boston, thus well illustrating the cooperative spirit among these machinery men and their willingness to divide honors with the southern states.

One very interesting feature about the machinery exhibit that was evident to the most casual observer, was the educational effect it was having on the hundreds of mill men present. Many of these had been denied an opportunity to visit the big show in Mechanics Hall in Boston during previous years and the pointed inquiries they directed at the demonstrators of the various new appliances they saw on exhibit, indicated their deep interest in everything new connected with their business. This one feature alone, would doubtless repay all costs of running the exposition. The mills who sent their men will be benefitted by the renewed interest of their workers and the advanced ideas of new and better ways of doing work absorbed by them at the show. The machinery exhibitors will be benefitted through the wider introduction of their new devices among the men who must use them and in many cases must recommend their use before they are purchased.

Among the exhibits were to be seen many elaborate displays, but the principal feature of the entire show was the exhibition of new devices. The showing of regular styles of machines, in addition to the new features, was necessarily curtailed at this exposition because of the lack of space. This necessitated economy on the part of the exhibitors and caused them to show only the newest and more interesting features of their manufactured products.

Inasmuch as the Southern Textile Exposition number of COTTON for October carried a description of a large number of these exhibits, this matter will not be repeated in this issue, and only a few of the exhibits which were not secured in time for the previous issue, will be described at this time.

The Toledo Scale Company, Toledo, Ohio, displayed portable, hanging, picker lap, and counter scales. O. E. Schupp, district manager, and H. E. Boody, office manager, from the Atlanta division were in charge.

The Universal Winding Company, of Boston, Mass., exhibiting a machine which they are putting on the market for doubling yarns preparatory to the operation of twist-

ing. This machine really represents a new method of winding, combining the advantages of the well known Universal system as relates to the uniform laying of the yarn and the making of a compact package, and the advantage of friction driving to this special class of work, where a constant speed of yarn delivery is desirable. By reason of the very high speed at which the machine can be successfully operated it is called the Double Speed Doubler. The machine was of much interest as it is an important factor in improving the quality of ply yarns through the yarn being wound with uniform tension on each strand and delivered to the twister spindle under the most favorable conditions. This exhibit was in charge of Frederick Jackson, the southern representative of the Universal Winding Company, with offices at Charlotte, N. C. Frederick H. Bishop, the secretary of the company, was also in attendance.

The Draper Company, Hopedale, Mass., had a large and comprehensive exhibit consisting of six looms of various types in operation. These looms were as follows: one 36-inch E Model, with large filling battery using coarse filling and with large shuttle, on a heavy four harness weave; one 30-inch E Model, with steel harness stop-motion and Straw's patent feeler arrangement on a two shade gingham weave; one 36-inch P Model, with the largest size of shuttle made by this company, using very coarse filling on a heavy four harness weave; one 36-inch K Model, on fancy goods, using twenty harness dobby; one 90-inch L Model, making broad sheetings; one 40-inch E Model, with double filling fork on a two shade narrow sheeting. Nearly all of these looms had cut gears, and represented standard construction. In additions to the looms were one or more cases of spindles, rings, loom temples, etc.

At this exhibit B. H. Bristow Draper and Dana Osgood of Hopedale with J. D. Cloudman, the southern agent with offices in Atlanta, were in charge. They were assisted by Messrs. Forster, Haynes, Warren, Pool, Quinn, Oppenshaw and several young lady operators for the machinery.

The General Electric Company, Schenectady, N. Y., included in their exhibit motors peculiarly adapted to driving textile machinery. One of the latest type ball bearing four frame motors, mounted on an up-to-date steel motor support, exactly as it would be in a mill. A number of starting devices, compensators and switches, automatic and non-automatic. In addition, there were devices, such as the mast arm support and type "C" Mazda lamp, which are exclusively used in lighting mill villages, various samples of Mazda lamps for the interior lighting of mills, stop-motion transformer, heating devices, switchboard, etc. D. W. Peabody, of the Atanta office, was in charge of this exhibit assisted by Sidney B. Payne and C. A. Chase of Boston; J. B. Ward of Lynn, Mass.; W. A. Woolford and W. J. Dorworth of Baltimore, Md.; G. P. Coles and W. H. Wylie, of Charlotte, N. C.; A. F. Giles, S. H. Roberts and H. W. Reding of Atlanta.

The Seydel Mfg. Co. of Jersey City, N. J., gave away a barrel of sizing compound, which they had on exhibit, to the mill man guessing nearest its exact weight. Over 300 guesses were registered averaging all the way from 250 to 1,100 pounds. M. O. Alexander, superintendent of the Woodside Cotton Mill at Greenville, made the winning guess of 560 pounds and was awarded the barrel of compound. The barrel was taken to the exhibit of the Toledo Scale Co. and weighed.

The Hercules Truck Mfg. Co., Philadelphia, Pa., showed a line of special trucks for handling packages and cotton goods in textile mills. These trucks, which are known as the "Hercules-Jumbo" trucks, bring a mechanical device to the assistance of ordinary labor, thereby lightening the task of the laborer and increasing his capacity. This exhibit was in charge of E. S. White.

The Harrison Safety Boiler Works, Philadelphia, Pa., exhibited a Cochrane V-notch recording meter attached to an 8-inch multiport safety exhaust outlet valve; and Cochrane steam separators. Also in this booth were boiler feed regulators and pump governors made by the "S-C" Regulator Company, Fostoria, Ohio. W. R. Jennison, representative for Georgia, Alabama and Florida, and J. E. Weinhold, representing North and South Carolina, were present at the exhibit.

The Westinghouse Lamp Company, 1261 Broadway, New York City, had a very interesting exhibit in which they displayed a full line of Westinghouse Mazda lamps for industrial lighting. This exhibit attracted a great deal of attention from visiting mill men. Elliott Reid of the New York office was in charge assisted by Julien Binford, Jr., manager of the Atlanta division, and H. T. Long.

The H. F. Livermore Company of Boston, Mass., showed in their exhibit various fibre specialties and a general line of hardware, including weave room and finishing room tools. They also displayed a large number of other specialties such as shuttle gages, shuttle clamps, "Berkshire" gear pullers, oilers, steel surfacing and samples of forgings, sheet steel specialties, malleable and gray iron loom repair parts, springs, leather pickers, lug, picker, and check straps, etc.

The Main Belting Company of Philadelphia, Pa., exhibited samples and pictures as well as data on "Anaconda" belting operating in cotton mills. They distributed catalogs giving complete data covering this make of belting and its adaptability for textile power plants and other work. Rupert E. Hall of Philadelphia was in charge of this exhibit.

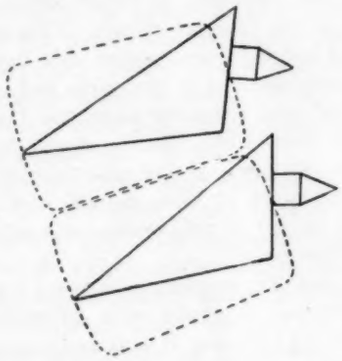
The Spartan Sizing Compound Company of Spartanburg, S. C., showed samples of cotton goods made by various mills using their Spartan sizing compound. They also showed samples of the compound itself. The exhibit was in charge of J. T. Moreland, the proprietor of this company.

The Stafford Company of Reidville, Mass., had a hand-

some exhibit on the first floor of the main exposition building which contained three of their "Ideal" automatic looms in operation showing a number of new improvements. Fred H. White, the southern agent, with offices at Charlotte, N. C., was in charge assisted by G. C. Dunn, W. W. Watt, Jr., and C. M. Setzer.

The American Steam Gage Valve & Mfg. Co., of Boston, Mass., exhibited their "Ideal" steam trap in sectional form; an American Thompson indicator; a trap tester to demonstrate the leverage power of the trap valve; a dead weight gage tester for testing gages; a safety valve shown in section, and several types of recording gages. The exhibit was in charge of J. E. Swendenan of Boston and H. Parker, the southern agent. W. W. Wischmeyer, the Atlanta sales representative, was also in attendance.

The Atherton Pin Grid Company of Providence, R. I., exhibited their improved pin grid bars for cotton pickers. These grid bars are adjustable, and were something entirely new to many of the manufacturers visiting the exposition. The illustration is actual size and shows plainly



the striking edge of the bar. Also note the actual length of the tapered pins and the slant of same, which prevents the cotton from clinging and that the points of pins on top of bar shoot over the striking edge of the under bar. This prevents the good stock from going through. Owing to the superior opening of the cotton caused by the action of the beater on the cotton against these pins, it is lightened up in such a manner that it passes forward to the wire screens without being knocked below the bars by the action of the beater, as in the case where the cotton passes through the picker in a bunchy condition. The result, of course, means much less waste of good cotton under the bars, besides superior preparing of the cotton for the cards. The split lap preventers of this company were also shown as was a sample of the new double edge knife bar which this company is now putting on the market. This latter allows the knife bar to be reversed when one edge gets dull thereby doubling the life of the bar. L. D. Armstrong, the treasurer of the company, was in charge.

The Cement Products Co., of Wilmington, N. C., exhibited a complete line of "Saniset" tanks consisting of portable sanitary septic tanks and privy tanks. These are especially adaptable for cotton mill villages where the buildings are equipped either with or without running water. J. F. Harris, the vice-president of this company, was in charge of the exhibit.

The Westinghouse Electric & Manufacturing Co., exhibited their new line of electrical equipment for cotton mill service, including the type "CS" steel frame textile motor, the type "H" conduit wiring, full automatic, oil circuit breaker for textile motors, and the types "T-1" and "T-2" non-automatic oil switches for small textile motors. A one kw. turbine lighting set for auxiliary lighting, a 15 kw. geared turbine unit, a new development permitting low generator speed and high turbine speed, making a highly efficient overall unit possible. Individual loom motors. Photographs and publications covering all kinds of textile applications. Fifteen or more "Live Exhibitors" at the exposition used Westinghouse motors in connection with their exhibits.

The Conneaut Shovel Co.., shovel specialists, with headquarters at Conneaut, Ohio, were the only shovel makers in the United States who exhibited their products. They had a demonstrator at the section reserved for the Poe Hardware & Supply Co., and this demonstrator indicated plainly the strength and durability of the Conneaut shovel.

The Clinton Cam Company, of Clinton, S. C., exhibited the Casey cam patch, which is a new invention for patching loom cams, where the rim becomes worn so that the cam becomes useless. The Casey cam patch is readily attached in a few minutes thus removing the necessity of tearing down the loom to make the emergency repair. This exhibit was in charge of President H. L. Scaife.

The Eureka Mfg. Company of Lincolnton, N. C. showed a complete set of "States" sectional grates designed by L. A. States, M. E., of Gastonia, N. C., mounted on specially designed ventilated bearer bars, together with several short length full size aluminum models of the grates of convenient weight for handling and examination by the visitors.

The Utility Mfg. Co., of Goldsboro, N. C., showed samples of packing cases suitable for textile mill work. These cases were made of three-ply hardwood veneer. L. B. Borden, the president of the company, was in attendance.

One of the most interesting sections at the exposition was devoted to the mill products. Particularly was this section of interest to northern visitors and exhibitors, many of whom were not aware that goods of the character shown were being manufactured in the southern states. These exhibits attracted so much interest that influential members of the Textile Exhibitors Association of Boston decided to invite these and other southern mills to place exhibits at the Boston show at Mechanics Hall next April. It will be well for the southern mill men to consider this proposition seriously and to place these exhibits or similar ones

where the people of the North can fully realize and appreciate what is being done in the South along textile manufacturing lines. Nothing convinces a man quite as quickly as seeing with his own eyes. Exhibits were shown by the following southern mills:

ARAGON COTTON MILLS and ARCADE COTTON MILLS, Rock Hill, S. C.: Exhibiting 39-inch, 80 squares, 4.00 yard goods, in the gray state, bleached and printed, these companies only making one kind of goods.

BROGON MILLS, Anderson, S. C.: Attractive patterns of the company's Anderson, Romaine and Saluda flannels; also Fairy Cloth and Louise twills, and a number of patterns of its Romper goods under the Ladlassie cloth ticket.

CAMPERDOWN MILLS, Greenville, S. C.: Some ginghams in bolts and articles made from same, such as children's dresses, aprons, bonnets, etc.

DUNEAN MILLS, Greenville, S. C.: Featuring a miniature model of the company's entire plant, electrically lighted. With this the following fabrics were also shown: Colored striped shirting, silk shirting, silk dress goods, ladies' suiting, fancy novelty dress goods, men's summer suiting, fancy striped new-cloth, voiles, plain and fancy; curtain scrims, Ottoman cloth, ratine, crepes, serges, lawns, plaids, poplins, gaberdines and marquisettes.

GREENVILLE COTTON MILLS CO., Greenville, S. C.: Sample cases and cartons of Ball sewing thread and sample work shirts, both its own manufacture.

INDIAN HEAD MILLS, Cordova, Ala.: Its famous Indian Head sheetings finished in the gray; also bleached in the hard and soft finish and its various grades of cotton flannels.

JUDSON MILLS, Greenville, S. C.: Satins, piques, voiles, narrow fancies silk stripes. The voiles are both in fancy and plain designs. "Dreamland Birds-eye" diaper cloth.

LORAY MILLS, Gastonia, N. C.: Print cloths and a full line of kindred cloths manufactured by this concern.

NUCKASEE MANUFACTURING CO., Greenville, S. C.: Men's nainsook athletic underwear, consisting of shirts, drawers and union suits.

PARKER COTTON MILLS CO., Greenville, S. C.: Finished cloths manufactured by the plants owned by this concern. The general line of shirtings and women's dress goods were shown, and along with them the special features of pillow tubings, dimity quilts and novelty fabrics. Fancy piques in stripes and checkerboard effects.

PELZER MANUFACTURING CO., Pelzer, S. C., Ellison. A. Smyth, president: Drills, sheetings, print cloths, etc.

WARE SHOALS MANUFACTURING CO., Ware Shoals, S. C.: Exhibited 20 pieces of the goods it manufactures, including honest width sheeting, Ware Shoals fine sheeting, Casco fine sheeting, Ware Shoals sheeting, Ware shoals shirting, Ware Shoals 2.50 drill, 30-inch tubing, 20-inch red stripe tubing, 36-inch cotton bagging and 30-inch shirting.

WATTS MILLS, Laurens, S. C.: Fancy cotton goods, such as voiles, shirtings, dress goods, curtain cloths, crepes, etc. Some of the goods were shown in the finished state, and others in the grey.

WILLIAMSTON MILLS, Williamston, S. C.: Plain and finished goods, consisting of fine shortings and sheetings.

WOODSIDE COTTON MILLS, Greenville, S. C.: Print cloths, grey and finished; cretons, cambric, percales, shirtings, etc.; cotton table damask, mercerized.

UNION BLEACHING AND FINISHING CO.: A complete line of bleached and dyed goods, consisting of muslins, nainsooks, long cloths, cambrics, diaper cloths and dyed percales, shirtings, etc.

Notes Made By An Observer.

The model 30 combination cone and tube winder, which was shown by the Foster Machine Company of Westfield, Mass., has been presented by this company to the Textile Department of the A. & M. College at West Raleigh, N. C.

A. S. Fuller of Boston, Mass., agent in this country and Canada for John Hetherington & Sons, Ltd., textile machinery manufacturers, has so far recovered from his recent serious operation as to be able to be present at the exposition where he greeted his numerous friends in his old time hearty fashion. Mr. Fuller is gaining rapidly in weight and a few months more will no doubt see him back on the links assuming his old time form at golf.

James (Jimmy) Strang of the Saco-Lowell Shops was making himself very popular with the ladies by distributing, on behalf of his company, small boxes of Norris' chocolate candy. It is needless to say that popular as "Jimmy" has been in the past he eclipsed his own record at Greenville.

Hans F. Bauer, the textile expert of the Douglas Company, starch manufacturers, at Cedar Rapids, Iowa, was in attendance at the Douglas exhibit. This company was distributing as souvenirs vest pocket note books of green seal leather equipped with a renewable pad.

The dustless card stripping apparatus that comprised the exhibit of Wm. Firth, Boston, Mass., was sold and shipped, after the close of the exposition, to the Ware Shoals Mfg. Company at Ware Shoals, S. C.

The official number of *paid admissions* was 22,001. Who paid that odd ten cents?

D. A. Henning, Jr., southern sales agent for the Monroe Calculating Machine Company, with offices at Greenville, S. C., was greeting his many friends and demonstrating the speed and accuracy of the Monroe calculator.

C. D. Taylor, the southern representative of the National Ring Traveler Company of Providence, R. I., with offices at Gaffney, S. C., had charge of the National exhibit at the exposition and was shaking hands with his hundreds of friends during the show week. He was distributing as souvenirs twelve inch double edge desk rules bearing the imprint of the National Ring Traveler Company.

J. A. Hansen represented the Standard Fibre Company of Somerville, Mass., at their exhibit and demonstrated the products of this company to the thousands of visitors.

John Hill of Atlanta, southern representative of the American Moistening Company of Boston, Mass., developed a unique advertising stunt by giving out at sovenirs small yellow silk flags bearing the initials of the Southern Textile Exposition—1915 and the company name. These he utilized in decorating practically every public service and private automobile in Greenville, besides giving away a large number to the visitors in the building. It is also of interest to note in connection with the interesting exhibit of this company that a portion of this exhibit was shipped to the

Hamburger Cotton Mills, Columbus, Ga., at the close of the exposition.

Frank B. Comins, vice-president and treasurer of the American Moistening Company, was one of those who came all the way from Boston to attend the exposition.

Geo. F. Bahan, southern representative for the U S Bobbin and Shuttle Company, Providence, R. I., with offices at Charlotte, N. C., was distributing as souvenirs of the exposition seal leather bill folds. These were in two sizes, the smaller ones of which each contained a $10.00 bill.

Horace A. Smith, secretary and treasurer of the Philadelphia Grease Mfg. Co., was in personal attendance at the exhibit and was presenting to his many friends a vest pocket note book with a seal leather cover as a souvenir of the occasion.

Jas L. Nieukirk, manager of the Philadelphia office of the Leatheroid Mfg. Co., was presenting his visitors with signature blotters equipped with a Leatheroid top.

L. B. Rogers of the Boston office of the Leatheroid Mfg. Company, was in attendance at the Leatheroid exhibit during the entire week.

Harry Scrivens, who represents the Philadelphia Belting Company in the South, was personally present, shaking hands with his many friends. Harry advises that his company has recently largely increased the size of its belting factory in order to more promptly serve the many customers of this organization.

R. P. Champney, construction engineer for the Graton & Knight Mfg. Co., Worcester, Mass., came down from Worcester especially to attend the exposition and was present at the Graton & Knight exhibit during the entire week. This company was distributing among its many friends and customers memorandum tablets with seal leather covers and renewable pads as souvenirs of the occasion.

Edwin H. Marble, president of the Curtis & Marble Machine Company of Worcester, Mass., who was present at the exhibit of this company during the entire week was presented with a handsome piece of silverware a few weeks ago by 31 employees of his company in honor of the 20th anniversary of his wedding. It is of peculiar interest to note in this connection that the 31 employees in question had been in Mr. Marble's employ for a period of over 20 years.

Dr. Geo. M. MacNider, manager of the southern office of the National Starch Company, (Corn Products Refining Co.,) which is located at Greenville, S. C., was in personal charge of the National Starch exhibit, assisted by A. G. Smith and J. R. White. These gentlemen were distributing black rubber letter openers as souvenirs.

The informal reception and dance at the Ottaray on Thursday night was attended by practically all the exhibitors and by many members of the association and visitors. While there were many charming ladies present and dancing was enjoyed until well after midnight, there were also some few disappointments. A story is told of the southern representative of a well known northern concern who was called on his room 'phone by one of his acquaintances from the Middle Atlantic states, who advised that he had an engagement with two young ladies to attend the reception. He was looking for a partner for one of the young ladies he said, and if the gentleman on the 'phone would get into his "glad rags" and meet them at the Ottaray, all would be well. The genial purvayer of rubber goods immediately dug into his personal belongings and later appeared arrayed in his dress suit at the Ottaray, but his friend of the 'phone conversation and the young ladies in question never materialized, much to the amusement of a number of his acquaintances who were on the inside of the story and were watching his disappointment.

Edward B. Smith representing the Whintinsville Spinning Ring Company of Whitinsville, Mass., was distributing a hard rubber pocket pencil as a souvenir of the occasion. Mr. Smith and Fred Martin of the Mossberg Wrench Company of Central Falls, R. I., were the first two exhibitors to make hotel reservations in Greenville for the exposition. On their return from the Southern Textile Association convention at Asheville last June, they notified the proprietor of the Imperial Hotel that they desired to make reservation for the entire first week of November. This was before the hotel proprietor had even heard a textile exposition was contemplated for Greenville.

C. W. Coker, treasurer of the Southern Novelty Company of Hartsville, S. C., had a most unique and attractive booth built in the form of a rustic arbor and made of paper cones and tubes. Mr. Coker was distributing a little booklet entitled "Sonoconology" as well as toy horns made from paper cones of their manufacture with a reed inserted in the end.

The mass meeting held in a private room on the second floor of the Ottaray to discuss certain relations between "Dick" Thomas and an automobile horn was an unqualified success. It developed oratory of no mean order, and the earnestness and perseverance with which this all night meeting was conducted, compared favorably with the sedate United States Senate at its filibustering best.

Robert J. Freitag, secretary of the Steel Heddle Mfg. Co., was a member of the Philadelphia contingent present at the exposition. Mr. Freitag divided his time between the exhibit of his company and the Clemson College exhibit, where steel heddles manufactured by his company were being used in the big Jacquard loom that was used in weaving the pictures of President Wilson for distribution. Hampton Smith of Greenville, the southern representative of Mr. Freitag's company, was also in attendance.

Stuart W. Cramer of Charlotte, was in attendance at his interesting exhibit during the early part of the week.

D. L. Norris, president and treasurer of Norris Bros. shuttle manufacturers, Greenville, was greeting his many

friends and demonstrating his products at space 318. He distributed 12-inch folding steel rules as souvenirs of the occasion.

R. A. Taylor, inventor of the Taylor friction threader shuttle, which is manufactured by Norris Bros., Greenville, was in attendance at the exhibit during the entire week.

Karl Kologiski, southern manager for the Keystone Lubricating Company of Philadelphia, with offices at Savannah, Ga., was shaking hands with his numerous friends and acquaintances and incidentally demonstrating the value of Keystone greases. In this work he was assisted by C. G. Savage, who is not as dangerous as his name sounds. Mr. Savage was very popular with the visitors as he was presenting one and all with tin drinking cups and lead pencils.

C. W. McSwain of Clemson College, covered himself with glory by arranging one of the finest exhibits shown. The most popular feature of this exhibit was a Jacquard loom weaving pictures of President Wilson in black and white. After a number of these pictures were completed, they wre cut up and distributed among the visitors as souvenirs.

Capt' J. Adger Smyth, Jr., president of the Dunean Mills at Greenville was presenting all visitors at the Dunean exhibit with wash ties made from cloth woven at his mills.

W. Irving Bullard of Danielson, Conn., was in attendance at the exhibit of the E. H. Jacobs Mfg. Co., of which company he is vice-president. Mr. Bullard was accompanied by Mrs. Bullard who expressed herself as being much interested in Greenville and its environs.

C. W. Thrash, the Atlanta representative of the Lunkenheimer Co. of Cincinnati, was in attendance at the Lunkenheimer exhibit. A convention, or exposition, without Mr. Thrash would not seem quite natural. This company was distributing a unique watch chain as a souvenir.

Robert P. (Bob) Smith of Smith-Drum & Co., Philadelphia, who are known throughout the country as "makers of the best," was present during the entire week. While "Bob" was supposed to call attention to the merits of the Smith-Drum mercerizing, dyeing and finishing machines, he could only do this between times, because he was kept so busy shaking hands with his hundreds of mill acquaintances.

E. T. Switzer was another Philadelphian who was greeting old acquaintances at the show. Mr. Switzer had charge of the reception booth maintained for the use of its friends and patrons by the Aberfoyle Mfg. Company, Chester, Pa. Mr. Switzer was assisted in his work by Mr. Holt.

F. L. Peech, president of the firm of Peech Sons & Philips Company of Camden, N. J., was another member of the Philadelphia contingent.

J. G. (Jack) Rohrman of the Youngstown Sheet & Tube Co., Youngstown, Ohio, spent several days at the exposition, greeting his friends and acquaintances.

J. B. Barrett, Asst. Treasurer of the Franklin Process Co., Providence, R. I., was in charge of the exhibit of his company, which occupied a space in the Mill Products section of the exposition adjoining the exhibit of some of their southern patrons.

W. A. Graham Clark of Boston, Mass., had charge of the government exhibit of foreign cloths. Mr. Clark has charge of the Boston office of the Bureau of Foreign and Domestic Commerce and has visited and studied the textile situation in nearly every country in the world.

L. J. Bishop representing the Dixie Packing Co., of Atlanta, attended the convention during the entire week.

John Bothaney, the Atlanta representative of the Farbwerke-Hoechst Co., was greeting his many friends in Greenville.

B. R. Dabbs, of the Arabol Manufacturing Co., New York, was another Atlanta salesman present at the exposition throughout the week.

James B. Fitch, the genial manager of the D. D. Felton Brush Co., of Atlanta, was in attendance at the exhibit for one or two days during the show.

John Dobson, manager of the Atlanta office of Warren-Webster & Co., personally attended the excellent exhibit made by his company.

Max Einstein, the southern representative of the New Brunswick (N. J.) Chemical Co., with offices at Charlotte, N. C., was present throughout the week.

E. A. Fairbanks, representing the Providence Drysalters Co., was another Charlotte man who attended the exposition for several days.

F. B. Ferris, vice president of the Textile Mill Supply Co., of Charlotte, was in attendance at the exposition but had no exhibit.

Edwin Howard, the well known southern agent for the Mason Machine Works of Taunton and treasurer of the Executive Committee for the Southern Textile Exposition, was in attendance throughout the week. However, only a part of his time was spent at his exhibit. When seen away from his exhibit he was usually found counting money or making change. He became so expert at this work at the ticket booth, that his friends believe he is thoroughly qualified for a position in the United States Treasury Department should he ever desire to leave the machinery business.

Arthur W. Harris, manager of the Atlanta office of the American Warp Drawing Machine Co., was in personal charge of his interesting exhibit.

C. W. Godwin, who represents the Detroit Graphite Co., with offices at Spartanburg, S. C., spent several days at the exposition.

R. E. MacCausland, field manager for the Berber-Coleman Co., at Rockford, Ill., attended the exposition during the entire week and expressed himself as greatly pleased with its success.

S. J. McCaughrin, manager of the mill supply department of the Young & Vann Supply Co., Birmingham, Ala., came early and was among the last to depart.

W. T. McLeod, southern sales manager for Alexander Brothers, the well known leather belting manufacturers of Philadelphia, with offices in Atlanta, took personal charge of his exhibit at the show.

John McLaughlin, demonstrator with the Arnold Hoffman & Co., Providence, R. I., was present for several days during the week. His friends do not believe all that Miss Kelly said about him.

Frank G. North of Atlanta was another southern representative of Arnold Hoffman & Co., present at the exhibition. It is reported of Frank that he is taking a course of training as a racing driver, having been offered a position with the Ford Company as soon as he qualifies.

J. Kirk Rowell of Louisville, Ky., representing the American Kron Scale Co., of New York, took personal charge of his exhibit at the show.

Somnambulism is characterized by Webster as "the act or practice of walking in sleep." However, in this brief definition nothing is said of the peculiar traits of somnambulists, one of which is a reversion to habits contracted in early life. This peculiar trait was well illustrated one night at the Ottaray when a certain sleep-walker on the fifth floor, clad only in pajamas of a delicate pink, responded to a mental call of "front" and descended to the fourth floor in the early morning hours and aroused the occupants of the various rooms on that floor by a vigorous knocking at each individual door.

R. E. (Bob) Buck, who has charge of the Charlotte office of Arnold-Hoffman & Co., was another Charlotte man present. If he said anything about taking the machinery exhibit to Charlotte, he whispered it so gently that no one caught him in the act.

H. G. Welborn, formerly president of the Hampton Cotton Mills Co., at Columbia, S. C., and now residing at Lexington, spent several days at the exposition greeting his many friends. Mr. Welborn has accepted a position with the Douglas Starch Co., of Cedar Rapids, Iowa, as textile expert, and will probably be located in the New England field for the present.

A. E. Tregenza, the general sales manager of the Economy Fuse & Mfg. Co., Chicago, was in attendance at the Economy Fuse exhibit during a large part of the week.

F. V. L. (Alphabet) Smith of Atlanta, the southern representative of the S. K. F. Ball Bearing Co., was present throughout the week making things go easy, as they usually do on ball bearings. A convention without his smiling face would be declared unconstitutional by his many mill friends.

Milton G. Smith, the Greenville representative of the Jones and Laughlin Steel Co., and one of the members of the Executive Committee of the Southern Textile Exposition was kept very busy during the entire week. Part of the time was devoted to entertaining his friends and the other part he spent at the door taking tickets away from them.

J. E. Hull of Providence, R. I., the manager of the Victor-Shaw Ring Traveler Company was in attendance and the old fashioned spinning wheel and hand cards that were operated by "Aunt Mattie" in his booth attracted a great deal of attention from the visitors.

Fred Martin of Central Falls, R. I., representing the Mossberg Wrench Company, was another "clam eater" present. He was not satisfied with the noise he was making with the loom in his exhibit and so he distributed several hundred siren whistles among the visitors to help out.

Herbert Midgley, superintendent of the factory of Howard Bros., card clothing manufacturers at Worcester, Mass., was in attendance at the Howard Bros. exhibit. This exhibit was in charge of E. M. Terryberry, the southern representative with offices at Charlotte, assited by Lewis Crossley of Worcester. As a souvenir of the occasion this company's representatives were presenting their mill friends with a handsome gold cigar cutter and knife in a chamois skin case.

B. R. Wofford, the Atlanta representative of Jenkins Bros., manufacturers of valves and mechanical rubber goods, New York City, was in charge of their exhibit in the annex and greeting his numerous friends among the mill men.

Arthur L. Jenkins of Lawrence, Mass., representing the Emmons Loom Harness Company, of that city, was in attendance at the unique exhibit of this company during the entire week. He was distributing a handsomely illustrated booklet, which was printed on heavy coated stock and showed photographic reproductions of the hundreds of different styles of loom specialties manufactured by his company. Geo. F. Bahan, the Southern representative was also in attendance.

Geo. F. Bahan representing the U S Bobbin and Shuttle Company and the Emmons Loom Harness Company and A. O. Buzzell representing the J. H. Williams Company, Inc., were easily the largest exhibitors present. An effort was made to photograph them face to face, but no camera was found with a sufficiently wide angle lense to secure the desired result.

Frederick T. Walsh, the resident partner of Thomas Leyland & Company, Reidville, Boston, Mass., was in personal attendance at the Leyland exhibit. Mr. Walsh has had a wide experience in the textile industry, having, prior to his connection with the present firm, been engaged in calico printing and bleaching. Mr. Walsh expressed much pleasure at the success of the exposition and said he was glad to have an opportunity to come down and visit the South

Chas. W. Eastwood, secretary of the U. S. Gutta Percha

Paint Company of Providence, was another Rhode Islander to come South for the exposition. He was unable, however, to remain during the entire week. J. S. Palmer, the southern representative, was in charge of the exhibit and was distributing souvenirs in the form of lead pencils and scratch tablets.

Frank G. Litchfield, president of the Litchfield Shuttle Company, Southbridge, Mass., took personal charge of the unique exhibit of this company which showed upwards of 1100 varieties of shuttle attachments mounted on boards with a black velvet background. Mr. Litchfield made many new acquaintances on his trip and expressed himself as being thoroughly pleased with the exposition.

Many exhibitors at the Exposition were giving away souvenirs of one sort or another. A number of these have already been mentioned, but in addition to those mentioned, the following were noted:

U. S. Ring Traveler Company, Providence, R. I., a 12-inch ruler.

N. Y. & N. J. Lubricant Co., 165 Broadway, N. Y., a handsome clutch pencil with pocket clip.

The Stafford Co., Reidville, Mass., and A. Klipstein & Co., New York, were distributing pocket pencils shaped like a rifle cartridge.

The Keever Starch Co., Columbus, Ohio, and the Steel Heddle Mfg. Co., of Philadelphia, gave magazine pencils with pocket clips.

The Texas Company of New York gave samples of wax, key rings and pencils.

The Edwards Mfg. Co., Cincinnati, gave perpetual calendars in the form of an aluminum coin.

L. R. Wattles & Co., Canton, Mass., flag pins and pocket court plaster containers.

The following additional firms gave lead pencils: Dixie Packing Co., Atlanta; James H. Billington Co., Philadelphia; Bird-Wilcox Co., Atlanta; H. Callaway Mims, Greenville; Guion Starch Co., Greenville; International Acheson Graphite Co., Niagara Falls; Bradley Stencil Machine Co., St. Louis; Joseph Dixon Crucible Co., Jersey City; and the Carolina Supply Co., Greenville.

The wide, smooth streets of Greenville lured many visiting automobilists into indiscreet bursts of speed. While many of these passed unnoticed, a number of Greenville's "finest" did occasionally hold up the afflicted ones. One of those who fell before temptation was a well known Atlanta man and while he was willing to vouch for the fact, that, at the speed he was going, if he had been in Atlanta he would have been commanded by the traffic policeman to move on and be in a hurry about it, he failed somehow to create the same desire for dizzy speed in the powers that be of the South Carolina city.

Two prominent members of the Rhode Island delegation were Messrs. Wilson and Thorpe of the U S Bobbin and Shuttle Co., of Providence.

E. M. Terryberry was present as usual, and while the Howard Brothers' exhibit was really a creditable exhibit, we are still of the opinion that the boys would have gone around to shake hands with "Terry" any way.

C. J. (Charlie) Kurtz, treasurer of the Keever Starch Co., Columbus, Ohio, was present at the exposition during the entire week. Charlie is such a frequent visitor at Greenville, however, that he now feels quite at home there.

James H. (Jim) Maxwell, southern agent for the Keever Starch Co., and a member of the Executive Committee of the exposition, took personal charge of his exhibit. Those present at the exposition do not longer need to take our word as to Jim's popularity among the ladies.

Richard T. (Dick) Tinkham, southern sales representative for the Economy Fuse & Mfg. Co., Chicago, gained for himself the reputation of being one of the best dancers in attendance at the show.

Ever and anon above the rattle of dishes and cutlery in the Ottaray dining room arose the familiar sneeze of Al. Smith of the National Starch Company. Al. and certain other gentlemen who played pocket pool with a toy ballon, pulled frequent vaudeville stunts for the benefit of the Ottaray diners.

Far be it from us to be knockers, but we heard a lady in Greenville talking about a certain young man who danced with her and said that he stepped on her feet clear to the knees. We wonder who the young man might be!

The "observer's" note book is far from exhausted, but the "make-up man" says the allowable space is consumed so we will close with

Thomas R. Riley,

the hired man of the exhibition, who might well be catalogued as the man who pulled the wires that made things move. Mr. Riley was officially known as the Secretary of the Southern Textile Exposition, whatever that office might mean. From the standpoint of work, it meant looking after everything and satisfying everybody who wanted something and couldn't find it, or who desired to make a complaint and couldn't find any one to be the goat. "Tom" was a silent partner in the exposition from the time of his engagement until its close, but, like many silent partners, he did an enormous amount of work and deserves an equal amount of credit. We hope that when the Southern Textile Exhibitors' Association is formed and its charter granted, that one of the first moves made by its members will be the permanent engagement of Mr. Riley as secretary and manager of its future expositions.

Was everybody happy? They were.

Mill Conditions and Market Reviews.

The Southern Mill Situation.

Big crops, abundant money, foreign orders, the high price of cotton, and the pretty nearly corresponding high price of yarns and cloth, prove that an industrial revival is at hand, and this activity is spreading to various branches of trade, and some industries are now enjoying a period prosperity which in some respects surpasses all others on record. The textile industry shows a healthy tone, there is active demand for goods and empty shelves are now being replenished. In certain lines of textiles, we are passing through a period of excessively stimulated demand which cannot be filled from any accumulated stock, and which is beyond the acpacity of the mills for current production.

That there is a real boom in the iron and steel business is no secret, and it looks as if every mill in the country will be crowded to highest capacity. The production of pig iron for the month of October was the largest ever recorded in this or any other country. If times were normal, this would be a barometric indication of overwhelming prosperity, but this enormous surplus consumption is now caused by the unhappy condition into which the world has been plunged, and iron and steel are today instruments of death which are depopulating many nations.

We have reasonable hopes, however, that after the war, the cessation of demand for war steel and iron will be replaced by the wants of belligerent countries for reconstructing their devastated cities and manufactories.

Commenting on the business situation, W. C. KENYON, treasurer of the Union Cotton Mills, Maiden, N. C., said a few days ago that business need not get much better to satisfy the most exacting. "Good business is not a hope," he said, "it is already a realization." He states that at their mill they are having satisfactory demands for their yarns, and plenty of repeat orders, and they are further encouraged that their business is beginning now to bear a profit, and not just exchanging an old dollar for a new one as has been the case in the past. They are adding new machinery to their mill, and feel very optimistic as to the future. Their output is 30's, 2 ply yarns.

A. M. DIXON, superintendent of the Trenton Mill at Gastonia, N. C., and state senator from that district, when interviewed by COTTON'S representative in regard to the mill situation said:

"There is only one thing on earth than can keep the mill business from 'picking' up now, and that is the dye situation. And I think that is going to be solved by making our own dyes in the United States and I believe the government will protect them, or if it becomes necessary, guarantee the investment. But there are two views which we must consider, one is that there will be only a short period of prosperity which will end with the war, the other is, that it will continue after the war and even be better when the war stops. The first view is taken because a large number of mills are manufacturing war supplies. The second, because we are handling many times more foreign trade than ever before and I believe that we will continue to handle it, and even more of it, after the war is over because we can hold our own, and at least we will be better prepared to handle it having had the experience. Then too, in the mill business it is generally a case of the survival of the fittest; those mills which are equipped with new and modern machinery will do better. But business is better in most every line, and it is bound to be booming in our line shortly."

Questioned about the exposition at Greenville, he said: "The exposition was a revelation. It was twice as good as anybody expected. A big surprise, a credit to Greenville, to the men behind it and to the Southern Textile Association. Everybody was pleased, the exhibitors as well as the visitors. All who had space are glad of it, and all who didn't, will have some next time."

Mr. Dixon also discussed the Palmer-Owen Child Labor Bill and continued: "I agree with President Sherard, it will work a fearful hardship on the people it is supposed to help. It will not hurt the manufacturer, because he can't afford to work his help in two shifts, one of eight hours and one of ten, consequently he will work ten hours, which means a labor law with a sixteen year age limit, which will be especially hard because it makes no exceptions. Then too, you can readily see the bad effect if you have a sixteen year age limit law, and a twelve year educational law. What will they do from the ages of twelve to sixteen if they can't work? They don't have to go to school, therefore, they will loaf. I visited a reformatory school near here, and asked the man in charge, 'Why are these boys here?' He said, 'Some because they didn't have the right kind of parents, but the majority on account of idleness.' So after all, we can't get away from the old saying, 'An idle brain is the devil's workshop.' There are two classes of people to blame for it. Those who are being paid to do it and those who really think they are helping the people, but who are misinformed. But I think as a whole, that if people believed more in practical justice, and less in poetic agitation, everybody would be better off."

Activities, in the way of additions, changes, enlargements, etc., are noted as follows:

Work is about to be begun on a new mill at Sylacauga, Alabama, by the Avondale Mills, of Birmingham. The new plant will be equipped with machinery for working up the waste products of the three mills already owned by the Avondale Mills. Contracts have been placed for the new equipment.

Francisco R. Villacencio, Mexican Consul at New Orleans, is endeavoring to negotiate a large loan for Yucatan henequin farmers who propose to build somewhere in the South a large plant for the manufacture of sisal binder twine, bags, etc. Sol Wexler, president of the Whitney Central National Bank, is interested in the project.

The Bibb Mfg. Co., Columbus, Ga., have recently placed with the Saco-Lowell Shops a contract for 18,000 additional spinning spindles and accompanying machinery, this new machinery to be used entirely for making automobile tire cloth and goods of that character. They have also con-

tracted with the same concern for 5,000 additional spindles on waste work.

Chas. Page, of Tulsa, Okla., and associates are progressing with their plans for the building of a 50,000 spindle mill.

The Statesville Cotton Mills, (Messrs. Miller & Kaneer) Statesville, N. C., have contracted for 3,000 additional spindles.

The Republic Cotton Mills, Great Falls, S. C., have placed their order for their new mill, 26,000 spindles, a part of it going to the Whitin Machine Works, and a part of it to the Saco-Lowell Shops. They expect to begin work on the new mill right away.

The Profile Cotton Mills, Jacksonville, Ala., are installing new spinning frames.

The Wilmington (N. C.) Hosiery Mills have been incorporated for $100,000, by John H. Kuck, R. E. Calder and Milton Calder.

The Gastonia Cotton Mfg. Co., Gastonia, N. C., is considering the installation of new spinning.

The Kohlmann Cotton Mill & Mfg. Co., New Orleans, are planning to install 2,000 additional spindles and accompanying machinery at an early date. They report business good, and are optimistic as to the future outlook.

The Maginnis Cotton Mills, New Orleans, have recently placed order for large amount of machinery. Mente & Company, of New Orleans, are also doing considerable in the way of improvements and additions.

Work on the new Rex Spinning Mills at Ranlo, N. C., is progressing nicely. The walls are up and the roof is about finished. Machinery will begin to arrive in a short time. The contract for 60 operatives houses has been let to J. R. Stroupe, of Charlotte.

The capital stock of the Knoxville Spinning Co., Knoxville, Tenn., will be increased from $50,000 to $100,000, to accommodate a larger business. New equipment will be added, and the output of the company will be increased.

The Glenola Cotton Mills, Eufaula, Ala., which have been operated for the past four years by Dickson and Hull, of New York, were purchased today by H. H. and L. L. Connor, owners and operators of the Eufaula Cotton Oil Mill. It is expected that they will resume operations at the mills, which have been idle for some months.

The Woodruff Cotton Mills, Woodruff, S. C., have just placed order for large addition to their mill, including pickers, cards, drawing, roving and spinning.

F. B. Chilton, of Houston, Texas, has purchased an old implement manufacturing plant, and is endeavoring to organize a company to convert the plant into a cotton mill.

W. J. Beattie, Jr., of Hope Mills; A. J. McKinnon, of Maxton, N. C., and John S. McNair, of Laurinsburg, N. C., have purchased the Hope Mills property, including group of four mills, and will install new machinery.

The Arlington Cotton Mills, Gastonia, N. C., are planning to install 10,000 new spindles, all arrangements having been made and contracts let. The new mill is to be two stories high and to cost $20,000. Night work will be discontinued.

The Valley Cotton Mills project, at Shelbyville, Tenn., has been succeeded by a new project to build a hosiery yarn mill and operate it under the name of the Shelbyville Cotton Mills. A charter has been secured, with capital stock of $100,000, by Wm. J. McGill, treasurer of the Sylvan Cotton Mills, and associates. The equipment will include about 4,200 spindles, and the output will be 10's to 18's hosiery yarns.

Machinery to double the plant of the Broad River Mills, Blacksburg, S. C., has just been bought, and the capital stock of the mill increased from $50,000 to $100,000. Cotton hosiery yarns are manufactured, and the present equipment is 5,000 spindles.

The Bladenboro Cotton Mills, Bladenboro, N. C., are planning the installation of considerable new machinery. They have at present 8,000 spindles on 8's to 14's hosiery yarns.

The Eagle & Phenix Mills, Columbus, Ga., will install several hundred automatic looms, replacing old style looms.

J. W. Morgan and associates, of Starks, Florida, are planning the building of a mill for spinning yarn from Sea Island cotton. Three thousand spindles are being considered as initial equipment.

The Waxahachie Cotton Mills, Waxahachie, Texas, have placed an order for considerable new machinery, and their output in the future will consist of heavier duck than has heretofore been made.

G. H. Miller and associates of Chattanooga, Tenn., are considering the feasibility of establishing a large spinning plant at that point. Some Philadelphia capitalists are said to be interested, and about $300,000 is being considered as the capital stock. Their plans call for a large mill, to employ several hundred people.

The Arista Mills Company, Winston Salem, N. C., has contracted with the Sanitary Engineering Company, of Charlotte, N. C., for the installation of modern sewage disposal outfits, to be installed at each of the operatives' houses, at their south mill village.

Col. Leroy Springs, president of the Kershaw Cotton Mills, Kershaw, S. C., has placed order for considerable additional equipment, consisting of pickers, cards, drawing, roving, spinning and looms. When the new machinery is installed, this mill will have 12,160 spindles, with accompanying equipment.

The Fort Mill plant of the Lancaster Cotton Mills, is planning to receive several thousand additional spindles, order for which was placed by Col. Springs a few weeks ago.

The Dixie Cotton Mills, Mooresville, N. C., are figuring on new machinery for their plant, this to be in the nature of an addition.

The Danville Knitting Mills, Bon Air, Ala., expect to double their capacity in the near future. No contracts have been placed. The mill is now running on 11's to 30's yarns and operating until 9 o'clock nights four days per week.

The Muscogee Mfg. Co., Columbus, Georgia, are planning to build a large addition to their present mill, the new addition is to contain 25,000 spindles, with accompanying machinery. This mill now has 35,000 spindles, and more than 500 looms on plaids, shirtings, denims, tickings, towels, cotton crashes, and yarns.

Machinery for the 4,000 spindle addition to the Robinson Mfg. Co., Charlotte, N. C., is arriving and is being installed. They expect to begin operating this new machinery at an early date.

The Monarch Cotton Mills, Union, S. C., will shortly add

considerable new machinery to their plant. They now have 63,600 spindles on wide print cloths.

The Cannon Manufacturing Company, Kannapolis, N. C., has placed a contract with the Sanitary Engineering Company, of Charlotte, N. C., for additional modern sewage disposal outfits for the new operatives' houses now under construction.

The Marlborough Cotton Mills at McColl, S. C., are overhauling their machinery and putting in some additional combers. They have also ordered a Creighton opener picker and ten Saco-Lowell cards.

The Marlborough Manufacturing Co., at Bennettsville, S. C., have just installed two 150 horsepower boilers which take the place of four old ones. They have also put in a forced draft system on these boilers and have discarded the old cooling tower, replacing it with a new spray cooling system. This mill also recently reclothed all cards and installed eight roving frames and two intermediates of Woonsocket make and are doing some extensive repair work in the village, recovering houses, etc.

The Darlington (S. C.) Mfg. Co., have recently repainted the mill throughout and are repainting and recovering the operatives' houses in the village. They report business as good.

The Wadesboro (N. C.) Cotton Mills have recently installed three spoolers, three twisters, four spinning frames and one roving frame, all Whitin.

The Hannah Pickett Mills at Rockingham, N. C., have recently completed twenty new operatives' houses and the mill in running full time day and night, practically doubling their production.

The Midway Mills at Rockingham, N. C., have just completed five new operatives' houses.

It is reported that the management behind the three mills at Laurinburg, N. C., are considering the erection of a 15,000 spindle mill to be located at Laurinburg and run in connection with their three present mills to handle waste products and low-grade cotton. This question has not yet been definitely decided. Business is reported as good with these mills and the Scotland Cotton Mill of this group has just been changed over to electric drive, discarding the use of their steam plant entirely. The Waverly Mill of this same company, is also electrically driven, having its own power plant. They are, however, also using outside power, while in the case of the Scotland Mill, central station power is used entirely.

Jennings Cotton Mill at Lumberton, N. C., are adding five new Mason cards. They have just completed a warehouse and have installed a drinking water system throughout the mill, supplied by an artesian well. This mill supports an excellent school with about sixty pupils and owns a fine school building. The building and other expenses connected with the school are borne by the mill. The village and grounds are also exceedingly well kept, but the school and its buildings are worthy of especial mention.

The National Cotton Mills at Lumberton, N. C., are preparing to change from steam to electric drive and will install fourteen group drive G. E. motors, transformers, etc. This mill reports business good. They have an excellent water system, the mill and all the houses in the village being supplied with artesian water.

The Gastonia Cotton Mfg. Co., Gastonia, N. C., have recently changed their No. 2 mill to motor drive and installed two 75 horsepower, one 50 horsepower and one 20 horsepower G. E. motors.

The Harborough Mills at Bessemer City, N. C., which have been closed down since June 13, 1913, started running again on November 15th last with J. W. M. Jenkins as superintendent and manager. The mill has been overhauled throughout and they have installed 3,000 new Whitin spindles, seven cards, twelve drawing frames, four intermediates, two slubbers, and ten fly frames, all Whitin. They have also brought 232 wide Draper looms, which will be installed early in December. This mill is also in the market for some new cloth room machinery and expects to purchase at an early date.

C. H. Neisler, of Kings Mountain, N. C., who is also proprietor of the Pauline Mills, is building a new yarn mill to be run in connection with the Pauline Mills, to be equipped for weaving principally. No machinery has as yet been installed except the motor for the electric drives.

The Dilling Mill at Kings Mountain, N. C., which went into the hands of a receiver several months ago, is again in operation. Messrs. Love and Myers, of Gastonia, are the receivers.

The Arlington Cotton Mills at Gastonia, N. C., have let a contract for an addition to their mills and will add about 15,000 additional spindles.

The Trenton Cotton Mills at Gastonia, N. C., have recently installed six cards and eight combers. They will now make combed yarn only.

The management of the Blair Mill at Belton, S. C., have a project under consideration which includes the building of a new mill in some other location and the moving of their present mill equipment to the new quarters and the purchase of some additional machinery.

The Douglasville Hosiery Mill at Douglasville, Ga., reports business good. This mill expects to make some changes in their dye house and finishing plant in the near future and will install new vats and additional machinery.

The Lois Cotton Mills at Douglasville, Ga., have just purchased a Barber-Coleman warp tying machine.

New England Mill Situation

There has not been much change in the mill situation in a month. Trade has quieted down considerably but the mills are running as full as they can, subject to the dyestuff shortage and labor troubles. At this time the large blanket mills at Nashua are still idle, the strikers demanding a settlement of their complaints by arbitration, and the mill authorities not yet agreed as to the wisdom of giving way after having offered the operatives concessions in wages if it is found upon investigation that the Nashua mills are paying less than competitors. Considerable bitterness has been aroused as a consequence of the strike and some of the mill authorities are inclined to the opinion that it may prove an act of prudence to allow the workers to remain idle for a time.

Manufacturers in other sections of New England are anticipating wage troubles of various sorts either soon after the turn of the year or when spring breaks. Wage dissatisfaction is in the air as a consequence of the abundance of

employment in many industries, and following the extraordinary concessions that have been made to induce labor to remain at work in munition and other war industries.

One of the important developments of the month has been the meeting of the National Council of Cotton Manufacturers with some of the leading merchants of New York, looking toward the adoption of open price methods in selling textile mill products. A committee was appointed at a meeting held in New York but less is expected from their work than from the individual work of manufacturers who are now discussing the new methods at Fall River, New Bedford, and Boston. Briefly, it is sought to bring about in the cotton manufacturing trades the same sort of price reporting which has been followed successfully for a year or more among the cotton finishers, and among the bridge and hardware manufacturers of the country.

It is patent to all cotton manufacturers, especially those engaged on staples like print cloths and sheetings, that inter-mill competition and price cutting have reached a stage where profit is rare and where the consumer is not benefited. The low prices that have resulted have not been extended to the consumer but have been distributed or dissipated among middlemen of all sorts. It seems probable that certain groups of manufacturers will finally come together and try to work out some price reporting plan whereby competition will be better understood, and whereby those who intend to seek business by price cutting shall not continue to frighten the great bulk of manufacturers who are content with moderate profits and a more stable business.

At New Bedford a few manufacturers have already arrived at the conclusion that there is something in the new method of competition out of which they may arrive at an agreement to work out plans for a trial of the new scheme on plain fine goods like lawns, voiles, etc. The Fall River manufacturers are much divided on the merits of the plan but they are being impelled to try them rather than go on under a system that is crippling many mills without helping any of them. It is stated among manufacturers that no economic movement in recent years has aroused so much interest as this one of trying to make a more intelligent competition through cooperative action.

Cotton mill machinery men continue very busy indeed. Tenders of business from foreign countries are being made and in many instances deliveries are so far removed that they cannot be undertaken, even where prices offered and financial arrangements made are in every way satisfactory. The home demand for machinery has become very broad and active, especially for automatic looms, better spinning and winding machinery, and for many of the new electrical appliances that are being used in up-to-date factories.

While few new mills are contemplated in the section some very extensive changes in old properties are underway. The Tremont & Suffolk blanket and napped goods mills are being overhauled for the production of better products. The new bagging mill of the Amoskeag Company will soon have its new products in the trade. The Pacific mills have bought the Merrimack Mfg. Co.'s printing plant and will remove the machinery to Lawrence, and will continue the production of some of the standard printed fabrics hitherto made in the Merrimack works. The Algonquin Printing Co., is adding four new printing machines with equipment for tentering goods and will undertake fine work in future, supplementing the staple work now done.

Machinery prices have advanced greatly, owing to the advance in iron and steel, the great advance in wages due to competition in labor from war munition factories, and to the unusual demand for the products of the largest and smallest concerns.

Bleaching and finishing plants are as busy as the supply of dyes and chemicals will permit. The bleachers have gone on for months accepting low prices for their work and making no provision to meet the increased prices of nearly all chemicals used by them, but by January 1st a new list of prices will go into effect. The finishing companies have been advancing prices steadily, and they have also been refusing a great deal of work through inability to supply colors or do the work required. Some piece dye works have advanced prices as much as 6 cents per yard and would prefer not to accept solid color work if they can avoid it. Colors that are fast to bleaching have advanced in many instances as much as 700 per cent, being scarce at the advance, some of the leading finishers are not accepting work save from their customers who are obligated to deliver on contracts they made before restrictions on contracts were adopted by the finishers in general.

The market for goods has been soft only on cloths of print cloth yarn construction. On nearly all other lines advances have been made. Staple ginghams have been advanced ½ cent a yard to a basis of 6¾ cents, staple tickings 1 cent to 12½ for 8 ounce goods, wide sheetings have been withdrawn in some cases and discounts shortened in other cases, while pillow tubings have been advanced again as much as 1 cent a yard on the finer qualities. The dress gingham mills, after having withdrawn many lines from sale, have shortened discounts or advanced prices on others, and the largest mills are still running on a four day a week plan, and will continue to do so until the end of this year. Prints were advanced to a basis of 5½ cents on November 15.

Print cloths dropped to a basis of 4⅜ for 38½ inch 64 x 60's, at which level a few goods were sold. Lower prices were accepted in the New York markets on sales between second hands. Toward the end of the month it looked as if a recovery of values was certain and the Fall River manufacturers were holding off in sales and even accumulating stocks rather than sell at a loss.

The fine end of the cotton industry and all fancy lines continue firm, and generally active. The fine mills are very busy, many of them running carding and spinning departments at night where they are working on very fine yarns. A wide variety of goods is being called for and although mills are asking stiff advances converters have been willing to accept the conditions when deliveries can be assured. There has been a great deal of difficulty concerning deliveries on repeat orders, due to the troubles of yarn dyers who cannot supply certain colored yarns used for decorative purposes in fancy cloths, and due also to the inevitable troubles of labor. When plain weaving is plentiful it is hard to keep skilled weavers busy on fancy work.

The volume of silk and cotton production in fabrics has been very large this year and although prices have jumped enormously because of the combined rise in raw cotton, traders are still asking for goods for immediate and nearby delivery, and in many instances placing orders for delivery months ahead. There has also been an unusually late de-

mand for skirting materials, such as piques, basket weaves, oxfords, suitings and other cloths of a weighty character. Although the finishing prices on dyed poplins have advanced in some instances 3 cents a yard, the demand for goods of this sort continues.

It is stated that printers are busier than they have ever been in the history of the trade, and if they were not running close to the end of their supplies of fast colors they could book orders that would keep them running for months. As it is, the large staple printers are running some departments at night and the largest works have all their machines in operation. Two of the largest bleacheries have been operating night and day and have been working early and late in their packing and shipping departments trying to hurry out goods already over due.

The large quilt mills have booked substantial orders for the coming four months. Some mills have taken blanket orders from jobbers to run through 1916. The new blanket season will open in the strongest way owing to the scarcity brought about by the Nashua strike coupled with an abnormal demand arising from the low prices made early this year. The wide flannellettes made for the manufacturing trades were priced for the new season at advances ranging from 1 to 1½ cents a yard and orders have been coming in freely. These new prices foreshadow stiff advances on the narrow goods when the openings are arranged for next month.

Cotton Comment.

BY H. AND B. BEER.

New Orleans, November 20th, 1915.

Although prices show a material decline compared with one month ago, due to killing frost having been delayed until 10 to 15 days later than the normal date, larger crop estimates as a result, and because of a falling off in the export demand, the situation, from the point of view as regards supply and demand, virtually remains unchanged.

According to reports from the interior, while some addition to the crop is the result of the open autumn weather, the increase in the yield is not considerable because there was little of a top crop to mature this year owing to the activity of the weevils.

Nevertheless, liquidation has been extensive, crop estimates for a yield of 12,500,000 to 13,000,000 bales have made their appearance, affecting Europe accordingly, resulting in less buying for account of foreign consumers.

In the meanwhile southern spot holders, as a rule, refuse to sell at the decline, preferring to hold for higher prices later in the season, as they realize that the crop is small and that prospects are for a full consumption.

Europe is trying to work out the South by keeping out of the market as long as possible, the object being to depress market and buy supplies at lower levels, but southern merchants and farmers are well off financially, having obtained as much for their seed this year as they received for cotton last year, they are not under contract, which is the case with the spinner, and it is only a question of time when the latter will be obliged to enter the market for future requirements.

During the month of October American mills consumed 570,000 bales vs. 482,000 for corresponding month last year, making total for first three months of the season 1,650,000 against 1,334,000 one year ago. Indications are that the consumption of cotton in the United States will continue large, as the number of active spindles at close of October was 31,319,000 compared with 30,461,000 last year.

While American mill stocks on October 31st were 1,346,000 vs. 716,000 last year, stocks in independent warehouses show a rapid relative falling off compared with one year ago, as they were 1,360,000 larger than last year on August 1st, whereas at the close of October they were only 397,000 in excess of last year's holdings, and by the end of November they will likely be smaller than they were last season.

The same developments are noted in the world's visible supply of American. On August 1st the world's visible supply of American was 1,611,000 larger than one year ago, and 1,957,000 larger than in 1913. Today it is only 671,000 larger than one year ago and only 153,000 larger than year before last. By the end of the coming week it will probably be less than two years ago, and within a few weeks, smaller than last year and for many years past.

Numerous estimates for a crop of about 13,000,000 bales have been issued, but indications are that the yield will not be over 12,000,000 including linters, which, in addition to about 2,000,000 carried over in the interior from last year's production, would make a total supply of about 14,000,000 bales which the South could furnish this season.

Of this quantity, American mills will need at least 6,500,000 bales, Europe at least 7,500,000 vs. 8,500,000 last year and 9,500,000 in normal seasons.

In other words the world's available at the close of next July will likely be 2,000,000 less than it was at the close of last season, or reduced to normal proportions. Therefore, there will be no big surplus to be carried over this year, and if Austria and Germany buy any considerable portion of this year's crop, and hold it in store until after the war is over, American and European spinners may find it difficult to obtain their full requirements for this season except at, perhaps, higher prices.

We have a favorable opinion of the market still, as we anticipate bullish statistical developments shortly and higher prices for the staple eventually.

The Yarn Market.

The depression in the price of raw cotton showed an immediate effect on the yarn market in a limited decline of prices. The general situation was somewhat mixed, and while some dealers reported satisfactory new business, others declared that business was dull. There were plenty of inquiries and offers in the Philadelphia market, but comparatively few sales were made at spinners' prices. However, spinners of two-ply combed yarns, North and South, are well sold up and some of them are behind in their deliveries. Prices continue to be proportionately high. Carded knitting yarns softened in spots, and the weaving situation looked better than it has for a long time.

Later in the month good business continued in yarns with some large sales of 50,000 to 100,000 pounds of weaving and knitting yarns. The business, however, was not well distributed, and the buyers continued talking lower prices for yarns.

The last of the month finds a good demand for combed yarns in spots and spinners of two-ply well sold up. The demand for single combed yarns is small as compared with that for two-ply, but there is considerable demand along these lines. The demand for mercerized yarn has eased somewhat and it is reported that some of the mercerizers have a considerable stock of cheap yarn, and while they are quoting high prices, they do not let the prices prevent the sale of any large quantities. There was a moderate demand for carded knitting yarn at the close from manufacturers in the local Philadelphia market and the sales ranged from single cases up to 100,000 pounds.

Weaving lines closed in better shape than at any time for several years. The damask trade is quiet and lace curtains are dull, but laces are in good demand. While spinners have in many instances lowered their quotations from the high price of several weeks ago on weaving yarns they are still above the level of the market and the majority of spinners are not inclined to make any further concessions.

Following are recent quotations on the Philadelphia market:

Southern Single Skeins.

8s	17½ @18	10s	18½ @
14s	18½ @19	16s	19 @19½
20s	20½ @21	24s	21½ @22
26s	22 @22½	30s	25½ @26

Southern Single Warps.

8s	18 @18½	10s	18½
12s	19 @19½	14s	19 19½
16s	19½ @20	20s	20½ @21
24s	23 @23½	26s	23 @23½
30s	26	40s	33 @36
50s	42 @44		

Carpet and Upholstery Yarns in Skeins

8-4 slack	18 @18½	9-4 slack	18½ @19
8-3-4 hard twist	16½ @17		

Southern Two-Ply Skeins.

8s	17½ @18	10s	18 @18½
12s	18½ @19½	14s	19 @20
16s	19 @20½	20s	21½
24s	23	26s	23½
30s	23½ @26	40s	32 @37

Southern Two-Ply Warps.

8s	18 @18½	10s	18½ @19
12s	19 @19½	14s	20½ @21
16s	21½	20s	21½ @22
24s	23½	26s	23½ @24
30s	32½ @33	40s	32½ @33
50s	43 @46		

Northern Two-Ply Carded Peeler Skeins.

22s	24½ @25	26s	26 @26½
30s	28 @28½	36s	31 @34
40s	35 @39	50s	40 @42

Two-Ply Combed Peeler Skeins.

20s	27½ @28	24s	29 @31
30s	36 @38	40s	40 @44
50s	48 @50	60s	55 @57
70s	62 @65	80s	70 @73

Southern Frame Spun Yarn on Cones.

8s	18 @18½	10s	18½ @19¼
12s	19 @19½	14s	20 @20½
16s	20½ @21	18s	21
20s	21 @21½	22s	21½ @22
24s	22 @23	26s	22½ @23½
30s	25 @26		

Northern Mule Spun Carded Yarn on Cones.

10s	21 @21½	12s	21½ @22
14s	22 @22½	16s	22½ @23
18s	23 @23½	20s	23½ @24
24s	25 @25½	26s	26½ @26
30s	27½ @28	40s	33 @35

Northern Mule Spun Combed Peeler Yarn on Cones.

10s	26 @27½	12s	26½ @28
14s	27 @29½	16s	27½ @29
18s	28 @29	20s	28½ @30
22s	29 @30½	24s	30 @31½
26s	31½ @32	30s	33 @34
36s	38 @41	40s	41 @43

One of the commercial agents of the Bureau of Foreign and Domestic Commerce in Central America reports that an American merchant in that country desires to correspond with manufacturers of knit goods, such as underwear, hosiery, etc. Prices should be quoted f. o. b. New York, New Orleans, or Mobile. Correspondence may be conducted in English. Refer to file No. 16410.

The Knit Goods Market.

A surface view of the hosiery market carries an impression of unusual briskness, which is strengthened by the stress upon some mills. Yet, from the manufacturers' standpoint, hosiery is perhaps the most disturbed branch of the textile trade.

Coarse gauge cotton goods attract the least attention, and some mills on these lines are by no means well employed, a reflection of the slack demand among jobbers. From a leading cotton yarn merchant selling to manufacturers representing 29 textile branches, it is learned that three are on a comparatively low basis of consumption. These are lace curtains, hosiery and carpets.

There seems no doubt that lack of dyes is the hosiery manufacturer's chief source of trouble. Losses already have been sustained through the use of blacks which have been rejected by some of the large distributing houses, and mill owners hesitate to take any further risk with untried colors and shades. Most mills are dyeing only as specifications are being received, and considerable stock in the gray is being accumulated.

In view of the uncertainty as to the duration of the war and what will happen to business in the United States following a cessation of hostilities, there is a growing sentiment among mills that an accumulation of any great amount of stock, even though it be unfinished, will involve considerable hazard. Knowledge of Germany's preparedness for war inspires the belief that the Kaiser's Empire is prepared for peace.

Germany may not have cotton in reserve, it is admitted, but with the restoration of peace, it is held, would lose little time in acquiring yarns to tide over until they could be produced on her own spindles. Taking this view, certain manufacturers are urging conservative production as the only safe course, pointing out that, in any event, a shortage can work no hardship except to the distributors, and it is this class that is held responsible for buying on a basis that depresses mill conditions.

This, of course, does not apply to artificial silk lines. Neither does it include lisle, fine mercerized and tram silk. Leading houses are reported taking in heavily of artificial silk hosiery, fearing there will be no early relief from the apparent shortage and high prices. This business, mostly, is for spot or early spring delivery, and mills engaged in it, generally speaking, are operating to capacity.

Some manufacturers of silk hosiery assert they are too busy, and complain of a shortage of help. Others, unable to procure their requirements of artificial silk, are substituting tram silk.

The campaign projected here in October for promoting the weaving of white hosiery as a means of getting around the dye scarcity, has made no headway, and there is nothing to indicate even a normal demand for white next spring.

Even tans are proving unattractive, and in some instances are being converted into black. A local dye house last month redyed in black 700 dozens of women's full fashioned mercerized tan stockings, which were made in Germany and had been in a New York commission house a year or more. In tan they were retailed at 50 cents. In black they are to be put out as a 75 cent stocking. The same concern has arranged for the redyeing in black of

15000 dozens of men's 25 cent tan half hose. An improved logwood black is being used to turn the quarter socks into 35 cent goods.

Fewer 25 cent socks will be worn next year by persons who insist upon fibre silk. Manufacturers and dealers say the price will have to be jumped to 35 cents, and for stock of superior finish, to 50 cents.

The weakness of the consuming public for what it can't get and rejecting that which abounds is contributing to the high cost of hosiery, a burden which falls upon the wearer.

It is not the spot business in hosiery that is lagging, orders that should be placed now for next fall are being withheld, and there is considerable delay in opening on these lines. War uncertainty and, one of its sequences, the dye famine, makes it difficult to fix prices. The primary trade, therefore, is in no hurry to take to the road, and inquiries are not coming in.

A mill salesman, visiting only eastern distributors, declares that some jobbers are taking advantage of the dye shortage for unloading old stocks of unpopular shades. The retail trade is well aware that some lines have been withdrawn because of difficulties in the path of the manufacturer, and when confronting a shrewd salesman may be persuaded to take "something just as good," particularly when it is represented that the class of goods desired is no longer on the market.

It is pointed out that the time is opportune for clearing shelves of accumulated odd lots, and that use of the opportunity explains in part why some jobbers are buying less than they appear to be selling.

Meanwhile prices are taking the only logical direction, and when the laggards are forced into the market, they may pay dearly for their waiting, both in greater cost and delayed delivery. Mills which are pushed already are indifferent about new business, and some are accepting no orders not accompanied by specifications, except in transactions with old and tried customers.

Advances, ranging from 5 cents a dozen, for children's hosiery to 25 cents have been announced, with an additional 5 to 10 cents a dozen for black.

There is considerable interest in children's fancy-top socks, of which, apparently, there are no heavy stocks. Domestic manufacturers of this class of goods are perturbed by offerings of socks of German make. These, however, are only promised. An importer quoting 80 cents but showing no samples, has 20,000 dozen of children's socks held up in Rotterdam. He has been trying for several weeks to enlist the aid of the State Department for getting the goods through.

Trade in underwear continues at high speed. Agents are on the road with samples for next year, and, with this year's shortage still an unpleasant memory, jobbers are reported showing keen interest.

With underwear mills busy and manufacturers of sweater coats booking volume orders, the knitting trade, as a whole, may be said to be on a thriving basis, nothwithstanding the troubles of the hosiery men.

Unusual credit is being granted by sweater mills. Buyers placing orders now for March to May delivery are given a November 10, 1916, dating.

Manufacturers say they have been driven to extending long credit by keen competition, and there is some talk of organizing for breaking up the practice.

In the hope of directing attention from dyed hosiery to white and natural colors through the medium of the national colors, the use of an inspiring trademark and recourse to a patriotic sentiment, J. P. Quinlan is bringing out "The Spirit of '76" half hose and women's hosiery. The bands, labels and packing will be embellished with a reproduction from the well known painting of a fifer and drummer sounding a call to arms in the early days of the revolution. The packing will be in red, white and blue, and will carry the sentiment, "Wear colors to foster home industry and protect your feet against unsanitary dyes."

Mr. Quinlan is a New York City mill agent. The "Spirit of '76" stockings are being made for him by the Reading (Pa.) Knitting Mills. He was impelled to adopt some means for circumventing the dye shortage by the fact that manufacturers and distributors practically are at the mercy of dyers. A mill had 410 dozens of hosiery ruined by a dyer using some sort of substitute, and when it put in a claim for damages the dyer replied: "We do not guarantee dyeing now. If you are not satisfied with our dyeing don't send us your goods."

Prepare for the Future.

"Preparedness is the watchword of the day in national matters pertaining to the army and navy," says *Cotton Chats* in a recent issue. "This is not the only direction in which we should all as good citizens keep in touch with the march of events.

"Our industrial army is greater by far than our combined military army and navy; with its dependent women and children it is thousands of times greater. Supposing the European war to be ended, several results are freely predicted. Millions of men from the various foreign armies will be let loose and in immediate need of employment. The enormous burden of taxes in all European countries will be an added inducement to emigrate to the United States. It is probable that foreign governments will prevent such wholesale emigration.

"In cotton manufacturing countries, Germany for instance, there will be greater effort than ever before to obtain the trade of the United States; labor costs in such countries whether reckoned per day, per person, or per unit of manufactured goods, are but a fraction of the labor costs in this country.

"Furthermore it must be remembered that the competition of the workers of this country would be to a material extent with women, children and cripples.

"Should the war prove of long duration and result in a reduction in the number of available operatives in this country there may be a labor famine.

"To meet either of the above conditions as applied to cotton mills making woven goods, the automatic loom is a necessity.

"By the end of the year 1915 there will be in operation in this country more than 285,000 Northorp looms. Stockholders in mills that have not yet replaced their old common looms may read the handwriting on the wall."

It seems strange that so many people fail to be polite, when by so being they could assist themselves to gain a better position in the world socially and financially.

COTTON MANUFACTURING.

Designs for Fancy Cotton Fabrics.

BY THOMAS WOODHOUSE AND JAMES IRELAND.

PART TWENTY-FIVE.

The cloth illustrated at Fig. 111 has the appearance of a somewhat irregular diamond pattern, a rather ogee pattern. The figure is developed entirely by floating warp threads, and the ogee effect is partly due to the different lengths of the floats, and partly to the difference between the number of warp threads per inch and the number of filling picks per inch. In the finished cloth there are 98 threads per inch and 52 picks per inch: the filling is of a yellowish brown color. There are two colors of warp threads which are arranged in the following order:

Light green	2	3	2	5	3	4	3	=	22
Dark green	1	4	2	3	2	3	2	1 =	18
									40 per repeat

The scheme of coloring in the warp is clearly very irregular, and the number per repeat is not a measure of the design itself which occupies 76 threads and 44 picks as

FIG. 111.

shown at Q in Fig. 112. The ground of the cloth is woven with the plain weave, but the close setting of the warp threads causes the ground to assume a more or less pronounced rib or repp effect. The draft at R shows that 30 harnesses are required, and with this order of drafting, the weaving plan would be that shown at S. With a pointed draft, 39 harnesses would be necessary, and although this draft would be simpler than that illustrated, the number of harnesses is increased and it is not as satisfactory

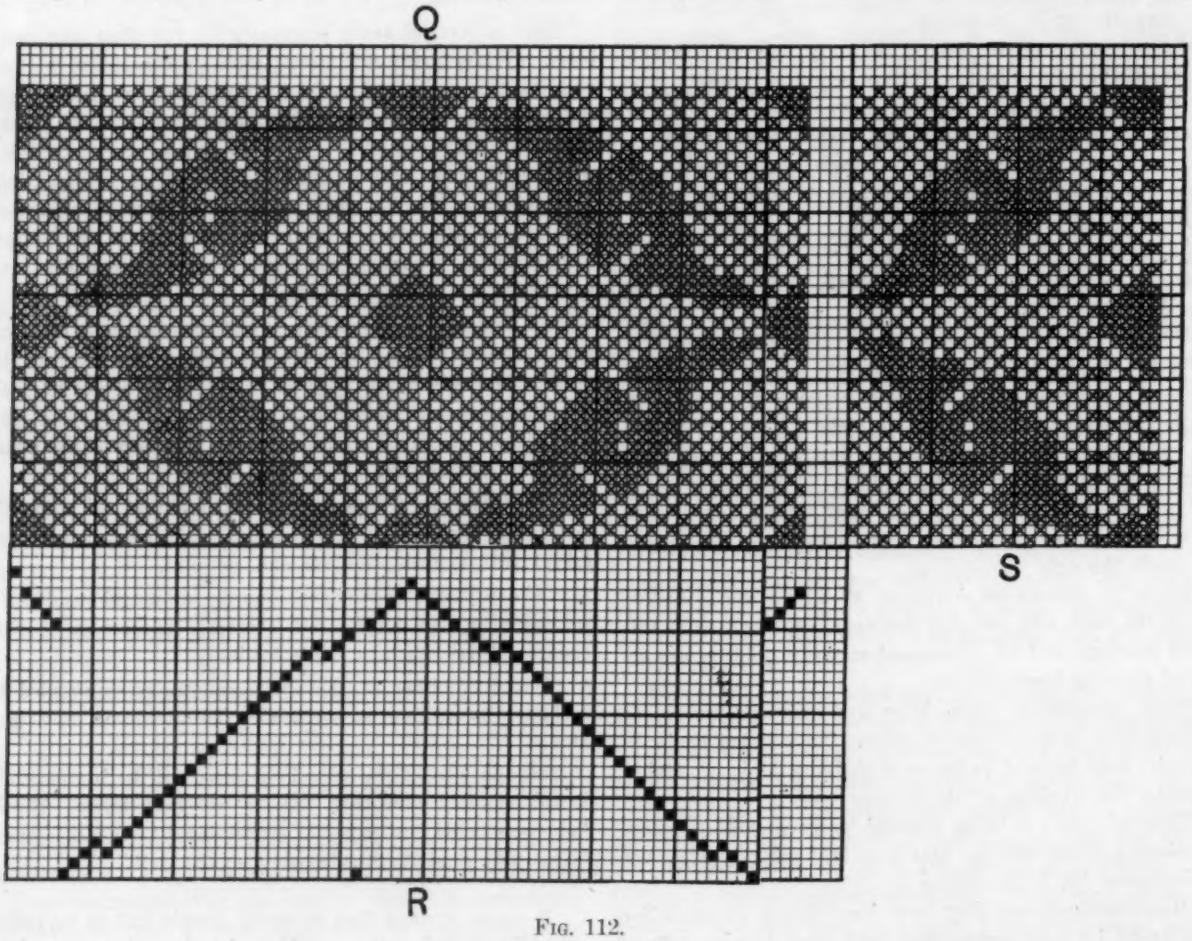


FIG. 112.

a number as 30. If the pattern were turned one-quarter round, and the two colors of warp yarn replaced by one color of green filling, the cloth could be woven with 23 harnesses, but the production of material would be less, because, in this case, there would be 98 picks of filling and only 52 threads of warp. In this case, however, the marks on the design would represent falling threads instead of rising threads, and the figure would be developed by floats of filling. If it were necessary to introduce two colors of green filling instead of two colors of green warp, it would complicate the mechanism, for it would then be essential to employ a multiple shuttle box loom fitted also with a "pick-at-will" motion, i.e., the picking motion would be arranged to pick one, two or more times from either end of the loom as required by the order of the colors of filling. This method of producing the pattern would reduce still further the production, because the loom would have to run slower: one can scarcely conceive of the pattern being woven in this manner because of the double disadvantage.

Referring again to the design at Q, Fig. 112, it will be seen that the chief figure appears at four places, that is, the pattern is symmetrical in both warp and filling; it

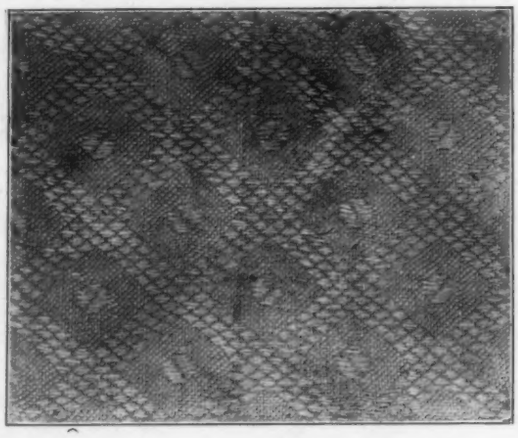


FIG. 113.

will also be seen that the floats in each figure decrease in length as the ends of the figure are approached. The irregularity of the figure is due greatly to the requirements demanded for preserving an unbroken plain weave effect at the junctions between the ground and figure portions of the design.

The cloth illustrated in Fig. 113 is unique in that the general effect of the pattern is a perfect diamond, and in addition the right and left diagonal bands which form the basis of the diamond are themselves made up of a series of much smaller diamond figures. These small diamond figures, and the centres of the large diamond are obtained by floating the filling picks on the surface of the cloth. In the finished state the cloth is "square," that is, there are the same number of threads per inch: in this case 54. This arrangement naturally enables all the diamond figures to appear in the most correct form, and indeed the only perfect form for this style of ornament; when similar ornamentation is of an elongated nature in either the warp or the filling, the resulting figures are usually termed "lozenge" patterns.

Since the pattern on the cloth is square with equal numbers of warp and filling, it follows that the unit design will also be square. This unit is shown at T, Fig. 114, and it will be observed that the unit is complete on 54 threads and 54 picks—numbers which, curiously enough, coincide with the number of threads and picks per inch; hence, each unit design occupies one square inch on the fabric. Referring to the structure of the design at T, it will be seen that there are two large diamonds in the repeat on the pattern; one of these appears in the centre of the design, while the other is made up, when the unit is repeated in both directions, by the four sections—one of which appears at each corner. Each large diamond is perfectly plain with the exception of the filling spot in the centre.

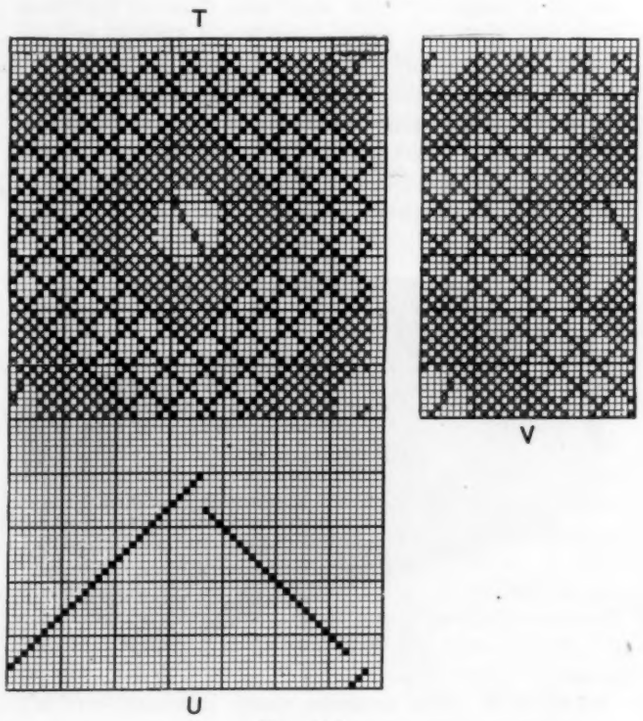


FIG. 114.

What would otherwise be long floats of filling in these spots are checked by raising for two successive picks each of the four central threads of the spot. This checking is twilled to the left in one diamond and to the right in the other, and hence the draft cannot be pointed. The actual draft and weaving plan are shown at U and V in the same figure, from which it is evident that 32 harnesses are required, and that there are 54 picks in one repeat of the card or lag plan. The pattern under notice has been woven with warp and filling of a biscuit color, but it is one of those fabrics which lends itself to reproduction in almost any art shade with equally pleasing results.

(*To be continued.*)

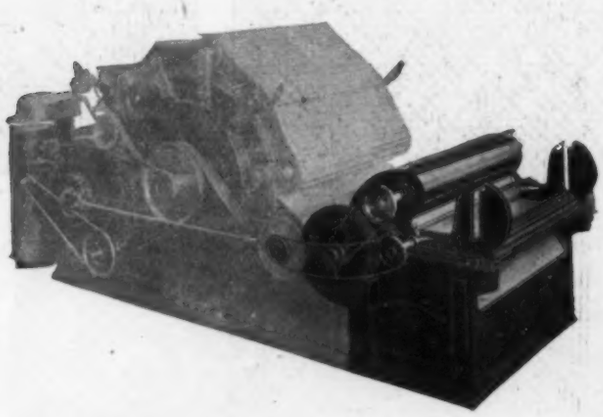
Cotton is cultivated northwest of Kerman and in the Province of Khorassan, and also around Kashan, Ispahan, Yezd, and Urumiah. The quality is not especially good, and the shortness of the fiber makes it unsuitable for many purposes. Persian growers have tried American seed, but have not obtained good results, although the quality is said to be better than that grown from native seed.

Better Yarn From Cheaper Cotton.

The attachment to a cotton card shown in the cut is the invention of a cotton mill superintendent whose main object was to produce a cleaning machine to enable his mill to use a lower grade cotton without sacrificing quality. His expectations were realized to an extent undreamed of and the results obtained have proven of such value that the two largest builders of cotton cards in this country have gone into the matter thoroughly and have equipped their shops to get out the new machine for their cards and cards of other makes.

Although the machines are just being placed on the market a number of mills, which have heard of the invention, have made it a point to see it and have given unsolicited orders for full equipments for their cards.

The inventor claims that not only can a lower grade of cotton be used, costing in the neighborhood of ½ to over a cent a pound less, but at the same time the cards can be speeded up in some cases 30 per cent, and a better quality produced with practically no extra waste. Our correspondent states his claims are being proven in a number of mills to the entire satisfaction of the buyers who have also found that the machines will pay for themselves in a remarkably short space of time. The fact that nearly five hundred machines have been ordered before the device has been placed on the market speaks plainer than even the inventor's most valuable claims.



One mill has found for itself that not only can it use a lower grade cotton but that besides getting a cleaner yarn it is also getting a stronger yarn. Hitherto, in an effort to attain cleanliness, three process pickings were employed with four high speed beaters. A clean lap was produced at the expense of strength and evenness. It is indisputable that high speed beaters do break and injure a huge number of fibers, causing extra waste in the cards and combers and a weaker yarn. This mill has thrown out one line of pickers and is running their two process picking with one beater each in the breaker and finisher, slowed down over five hundred revolutions per minute. The laps are not so clean but the stock is not injured and the new attachments are doing better cleaning than before, as the leaf is left large and not broken up into peppery bits so hard to remove.

A more or less technical description of the work accomplished by the machine follows:

The object of the invention is primarily to prepare cotton lint for the card, so that the different functions of the card may more effectively do their work. The practice of feeding to the lickerin a lap of cotton compressed by the calender rolls of a picker requires that the lickerin act as an opener, which it does ineffectively. The result is that lumps of cotton are carried past the mote knives to the cylinder, and in order to remove trash and short fibers, the mote knives necessarily remove a considerable amount of good cotton, and the cotton is delivered to the cylinder, containing short fibers and trash to fill up the wires of the cylinder and flats. Obviously, if the cotton can be cleaned of trash and a majority of short fibers before it reaches the cylinder, the cylinder wires and flats will stay clean and sharp longer, allowing them to card the fibers more effectively, thus producing a stronger and a more even yarn, as the unevenness caused by stripping is minimized by the lightness of the cylinder strips. These results have been accomplished in a very satisfactory manner.

The lap of cotton is fed to a preparatory lickerin in the usual manner and carried past the mote knives to a revolving brush placed above the licker and set about 10/1000 of an inch from the licker. The brush, revolving in the same direction, and at a greater surface speed than the licker, removes the lint from the licker. A draft of air through the condenser cage from a fan draws the lint from the surface of the brush to the surface of the condenser, which delivers to the feed-roll of the card a loose, fluffy sheet of cotton.

There is no draft of air from the cylinder on the preparatory lickerin and a section of the lickerin screen is removed and replaced with extra mote knives. With this arrangement, seed, sand, leaf, etc., is removed by the mote knives without removing any fibers at all, and the resulting waste, even from the highest grades of cotton, resembles very dirty picker droppings.

The action of the brush and air thoroughly loosens all the fibers from one another and loosens the remaining trash from the fibers, so that the mote knives under the regular lickerin remove practically all the remaining trash and short fibers. The air also carries away a certain amount of dust, depending on the grade of cotton used, which has a marked tendency to give the yarn a whiter and brighter appearance. The results of a great many tests have shown that no matter what grade of cotton is used, practically all the trash is removed and the percentage of waste decreased more or less, according to the cotton used.

One test on cotton dirtier than the lowest standard grade produced a practically speckless yarn. In the process considerably less waste was removed than by a card without the attachment set the same, running at the same speed, using the same cotton which produced a very dirty, uneven yarn. The reasons are obvious. In the first instance the mote knives of the preparatory licker removed solid dirt. the second licker, besides removing most of the remaining trash, removed the shortest fibers. The cylinder strips and flat strips then were light and contained very few long fibers. On the regular card the fly was heavy, but also contained good stock. The cylinder filled up almost at once, and the flat strips were extremely heavy.

On another test, made with the highest grade cotton, the waste percentage was just the same as single carding, and

in comparison the yarn showed cleaner, evener and stronger than the same cotton double carded, about 3½ per cent being taken out on the finisher card.

In another test, yarn produced from Middling cotton was cleaner than yarn produced from Good Middling cotton through the regular card. The doffer speed, in each case, weight of lap, sliver, etc., was the same. The special card, speeded up 25 per cent, still showed superior results.

The machine is made up of simple moving parts, which are easy to set up or take down, and which should minimize, if anything, a grinder's work, as the attachment safeguards the danger of any foreign material getting to the cylinder and injuring the wires. The cover over the brush and condenser can be removed by simply lifting off without taking out any screws or bolts.

The machine will be known as Gordon's Double Lickerin Card Attachment and can be applied to all makes of cotton cards.

TWENTY-FOUR HOURS ON COARSE WORK.

BY G. D. CRAIN, JR.

Although the subject of night operations, in view of the general demand for cotton goods, may be classed as academic to a certain degree, it is given interest in view of the fact that a certain mill has begun operations with two shifts, and will operate most of its equipment twenty-four hours a day.

The obvious fact that, with a given line of equipment, production can be greatly increased by running day and night has made the idea seem very attractive to a good many cotton manufacturers, and as a mathematical proposition it certainly looks good. In fact, on certain classes of work it seems that the 24-hour plan is practicable and satisfactory, but it is extremely doubtful whether it is desirable for work where skill and personal efficiency have to be considered.

In connection with the manufacture of comparatively coarse work, such as mop yarns, cordage, etc., there is a legitimate argument to be made in favor of the constant operation of the machinery, because the element of quality is less prominent here than in the plant which carries its finishing processes much further, and turns out a finer and more costly product. The plant manufacturing coarse goods must have, above all other things, quantity production. It has to, in order to get the volume in dollars and cents needed to pay its overhead expenses. On the other hand, the manufacturer who is selling a higher grade of product spends more in proportion for labor than his neighbor in the other line, and hence the conditions under which that labor is applied are much more important.

The superintendent of the plant making low-grade or coarse yarns, who has had wide experience in all kinds of cotton manufacture, was emphatic in his belief that night work pays for the kind of product which he is now turning out.

"The point is this," he said. "Here we have an unusually large investment in cards and other primary equipment. The machines are practically automatic, and do not require a great amount of skill in their operation. In order to get a return on the money tied up in this equipment, we must get a maximum production, and that means night work. Consequently in this plant the plan is, if we are running at all, to keep the cards going 24 hours a day, and in this way to make our plant show the greatest possible efficiency.

"I will admit that the quantity of production in a plant making fine cotton goods would fall off under night work, but this is not true of coarser goods. In fact, we get just as big a poundage at night as during the day, for the reasons I have pointed out—the machinery does the work, and the operators' personal efficiency is not the main proposition by any means."

The point suggested, that in the production of fine goods, where the personal equation, so to speak, plays a big part, is probably the most important, and really marks the dividing line between the kind of textile manufacturing which lends itself to 24-hours-a-day operation and that which must necessarily be restricted to normal, or day-time work.

The operating head of a big mill, who once tried to run all departments at night, on account of the chance to pile up output and take care of some business which had been offered, in addition to that taken care of by the normal production of the mill, had some interesting comments to make on the proposition.

"It listens well," he said, dropping into slang for greater emphasis, "but when it comes to turning out fine yarns and high-grade woven goods, there is strictly nothing doing. It doesn't pay, and that is all there is to it.

"In the first place, there is the matter of organization. Where it is a question of getting only a few men to handle machinery which needs little attention, and which requires no very great amount of skill, the problem is simple. But when it comes to providing help to run machinery where the individual operative must be skilled and expert in the management of the equipment, it is extremely difficult to get a night force together. It is obviously less desirable work than that by daylight, and the hand who takes a night job usually does so because he or she cannot land a position where normal hours can be observed.

"This means that the force is constantly being shot to pieces. Where the superintendent has one vacant place to fill when he is running only during the day, he has ten to take care of on a night run. As a result many of his machines are constantly idle, for lack of operatives, and consequently his production, such as it is, costs more than it does to produce in the day-time, because his expenditure for power, light and other incidentals goes on just the same as though he were producing 100 per cent of normal.

"It is my experienec that 60 per cent is a good night's run, compared with the output during the same number of hours in daylight. The work, too, is seldom up to grade, and it is almost impossible to get the character of production that is regarded as standard under ordinary conditions. Considering the inconvenience, the increased difficulty of keeping a night force organized, the greater cost of output and the reduction in quality, I do not believe that the saving made by using the machinery twice as long pays in a mill which is using very much spinning or weaving machinery, or carrying on many finishing operations."

The matter of quality is more important than quantity, when one is considering fine work, and this point is the factor which must swing the scales for or against the proposition. The concern which is turning out a line of goods

and selling them on a basis of quality cannot afford to have the variations which are bound to be introduced, according to the opinions of superintendents who have been there, when night work is depended upon. In fact, uniformity in output is an asset of such value that to risk it by working at night and consequently bringing about certain variations in the character of the goods that are almost inevitable, is a policy of doubtful merit.

But at the same time there are kinds of work in almost every mill which are not of the latter variety, but consist of the lower end of the work, beginning with the pickers and going through the cards. The suggestion is sometimes heard that the mill which is being equipped with the idea of operating only during the day, as far as spinning, weaving and other higher-grade operations are concerned, can install machinery providing for the earlier processes on the basis of 24-hour production. This class of equipment is more expensive, as a rule, than the machines used later on in the manufacturing process, and that is another argument in favor of operating them as long as possible.

Besides, while spinning, knitting and weaving call for female labor, which sometimes cannot be obtained for night work, and in some states is not available because of legal restrictions, the card room is manned with male help altogether, and the labor supply does not offer such difficulties. Of course, it would not be desirable to keep the power plant going merely for the operation of one section of the mill, but in these days of central station service, it would be possible to cut in the motors used for running the cards for the night shift on the central station lines, even assuming that the mill manufactured its own current for use during the day. In this way the power problem would be satisfactorily disposed of.

The superintendent first quoted, who is now running a mill which is producing chiefly coarse goods, and who is running his plant night and day, said in discussing the question, that if he were in charge of a plant which was doing much finer work, his plan would still be to run 24 hours a day in those departments where the personal effort of the operative does not figure to a large extent, even though reserving the finishing operations for day-time work.

"My idea of efficiency," he declared, "is to get the most out of your machinery that you can. It is not practicable to operate the machinery if the product is reduced in quality because of the deterioration of the character of the labor through night work. But if the labor factor can be taken care of satisfactorily, the manufacturer, in my opinion, cannot afford to consider throwing away the opportunities for economy made possible by day and night operation."

We noted in an earlier issue that Adolph M. Schwarz, attorney and counsellor at law, with commercial agencies in seven of the leading cities of the country, was opening an office in the Marine National Bank Building in Buffalo. This office is now in operation and is covering all of western New York, including such important cities as Utica, Syracuse, Rochester, Binghamton and Elmira, together with the Canadian towns of Toronto and Hamilton. This is a larger territory than the average man thinks as there are thirty cities within 150 miles of the Buffalo office of this company, with a population of 10,000 each. It is safe to predict that this Buffalo office will grow to be one of the larger offices operated by Mr. Schwarz.

An Economical Baler.

An all steel fire proof baler about which many complimentary things are being said by satisfied users is illustrated herewith and built by the Economy Baler Company, Ann Arbor, Mich. This baler is known as the "Economy Baler" and with the exception of the small hand power balers, is so designed that the plunger can be rapidly forced to the extreme bottom of the baling case if it is necessary to compress the first charge of material to the limit. This leaves all the remaining space in the baling case to be refilled for the next charge, therefore causing fewer compressions for each bale and saving labor and increasing the output of the machine.

The baler illustrated, which is known as the No 60, is a direct connected motor driven machine equipped with a new mechanical quick plunger return. By means of this mechanism the compression plunger lifts and folds back

automatically, leaving the top of the baling case open ready to receive the material. The operator does not have to take the time to swing any plunger or counter weight out of the way. Furthermore, when the baling case is filled ready for compression the operator simply throws in the clutch lever and then goes on about his business getting more material to the machine. When a certain number of tons pressure has been exerted upon the material the power is automatically shut off and the machine instantly stops by means of an automatic safety shut-off. This shut-off is said to be as positive and as accurate as a scale beam and is operated on the same principle. This patented automatic shut-off is said by users to be one of the greatest improvements ever put on a baling press, as it is operated entirely by simple mechanical means and is claimed to be absolutely dependable. The machine is practically "fool proof" and should prove a useful addition to the equipment of the waste house at any textile mill.

KNITTING DEPARTMENT.

The Manufacture of Fashioned Knit Goods

BY WILLIAM DAVIS, M. A.

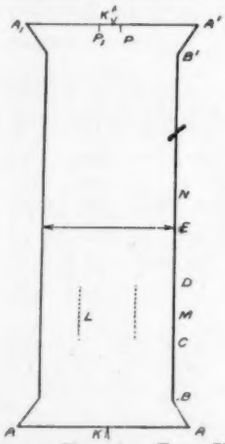
PART SEVEN.

The garments already described comprise separate articles of underwear, one for the upper and one for the lower part of the body. This arrangement of clothing has certain advantages; they are more easily handled and can be replaced separately when worn, in warm weather, one or the other may be discarded according to desire. The disadvantage is that the upper garment and the lower tend to separate and have a way of creeping up the back in an uncomfortable manner, whereas the union suit retains its position and can be readily put on and off. When the latter gets worn in one part however the entire garment requires to be replaced.

In Great Britain and the continent of Europe separate garments are still preferred by the majority of men wearers, but for ladies the union or combination garment is much more popular. In America the union suit, where its approved methods of build form the subjects of many patents, enjoys a large measure of popularity for both ladies and gentlemen.

In considering the method of making such garments on the full fashioned underwear machines it will be understood that the general features will resemble the methods of making the garments separately, except that they are joined together in a perfect manner. The matter will be demonstrated by taking as an example the ladies' combination garment which may be said to demand more skill than any other article belonging to this branch of the trade. The first part to be made is the upper portion or vest and the general principles correspond to those outlined in describing the making of the vest. The portion is given minus the sleeves in Fig. 1, which is made in a piece on the Cotton's patent frame, beginning at the width A A, which is at once reduced by narrowing one needle at once as far as B, when the part BC is worked at the plain width. At C the seamless bosom portion L is inserted in the manner already described in detail and the garment continued at the same width to the center point of the fabric E, from there the cloth is worked at uniform width of body to the point B_1. It is then fashioned by widening one needle at once to A_1. This piece of cloth is then turned sidewise on to the frame and the sleeve worked on to the part MN, narrowing taking place as previously outlined. This completes the fabric which is to act on the upper body and to this has to be added the nether portions in two sections, one for the right leg, and the other for the left leg. The piece of fabric is given in Fig. 2, drawn to the same scale and of correct proportions. The cloth is worked from the width SS downwards, fashioning exactly as given by the lines for the abdominal and seat. The given shape is for the right leg and the part on the left is to form the seat, whilst that on the right is for the front of the body. It may be a little difficult to follow the method of joining the leg to the body portion already worked, and the system will be better understood by referring to Fig. 1 and noting the center points K and K_1 on the lower and upper lines respectively for these are placed side by side on to the running-on or transfer bars to make a starting point for the leg. But there is another matter which it is well to keep in mind and that is the overlap or gusset which is required at the back for extra strength and this is achieved on the frame by taking the running-on at a point about two inches to the right of the center point K_1, namely P, whilst when taking the width for the second leg, the part A^1P^1 is taken, so that this gives an overlap of four inches which greatly increases the strength at the part.

The width, composed of AK plus A^1K^1P are next transferred to the frame to form the commencing width SS Fig. 2, and the frame is set to widen at once from S to T after which the length TU is worked plain and a very quick narrowing performed on the left from U to V. The width



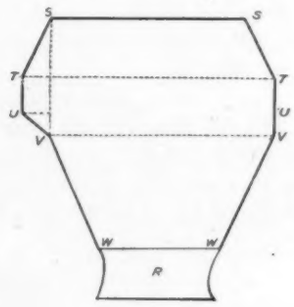


FIG. 1. THE VEST WITHOUT THE SLEEVES.
FIG. 2. ONE OF THE LEG PORTIONS DRAWN TO THE SAME SCALE.

VV is next narrowed rapidly in to the knee at W W to which the rib bottom R is attached as shown. For the remaining leg, a second portion is run on to the frame consisting of Part KA plus $P^1K^1A^1$ and the leg worked in exactly the same form as already given except that the sides are reversed, the seat being added on the right and the abdomen on the left. The extra fabric worked on the left of Fig. 2 forms the necessary overlap at the back, whilst the extra fabric given on the right gives requisite room at the front. The entire garment is given in Fig. 3, where it will be observed that the seaming has taken place A to Al, B to Bl, M to N and along VW for the legs. The part at the hips is shown rather sharp in form but this is rectified on the finishing boards where the shape is nicely rounded off through the whole garment.

SCHEME OF FASHIONING.

The general scheme of fashioning for a medium gage, such as 20 gage, has been to a certain extent outlined in the description of the vest, the sleeves and lower fashionings being the same, which also applies to the general scheme of the proportions and dimensions. As regards the

fashioning for the leg, the widening from S to T is generally on the scale of 3 and 1, 1 needle at once, but the fashioning from U to V is very rapid and cannot be done except by narrowing two needles at once every second course. For the leg fashioning in to the knee, the interval is generally 8 and 1, that is 2 needles narrowed after every 8 courses have been worked. Trimming is performed after the same principle as the vest, with the long front extending right down; during finishing care has to be taken to secure the extra portions of fabric at the seat by stitching

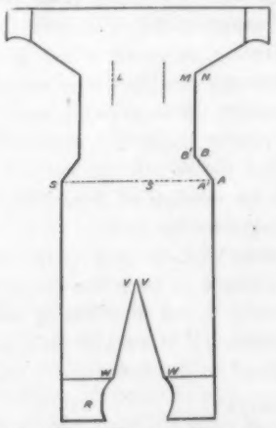


FIG. 3. THE ENTIRE GARMENT.

or these will become rolled into a ball and be felted so that they will only with difficulty be restored to the correct form in boarding out.

LACE ORNAMENTATION.

For this branch of the trade each firm requires to install a machine which is specially adapted for the making of lace ornamentation at the top part of the neck and breast. The frame has to be specially built for lace work and costs almost twice as much as an ordinary Cotton's patent frame. The number installed depends entirely on the demand which the firm experiences for these lace tops, in a small factory one will be sufficient, but in the larger firms there may be several. If exceptional business is experienced, the tops are handed over to a neighboring firm which is generally willing to assist in their production. The lace frame may be used for making the ordinary articles of underwear when it is not occupied in working lace patterns, but it is not economical working to employ the lace frame for ordinary goods because the production of ordinary fabrics is much reduced owing to the machine being built to produce only four garments at once. The manufacturer does not usually consider it worth while to adopt lace ornamentation on coarser goods than about 20 gage and the machine can be obtained in any gage from 21 to 33, the one found most generally useful being about 30 gage.

The most profitable way is to use the lace frame for making the lace tops only, and have these transferred to a plain frame to get the bodies attached. A full view of this frame is given in Fig. 4 where it will be noted that the general structure of the machine is that of the plain frame except that it is built in four divisions and shows very conspicuously the teams of cards hung above the needles of the machine, in connection with which are the needle points used for transferring the loops. The machine with a number of smaller divisions is hung with a series of cards of corresponding width to be adapted for making the lace designs on hose and half-hose. In the older type of mechanism as applied to the rotary frame, the lace points could be set at the commencement of the fabric with a certain order to produce a given pattern but the lace points did not obtain each an independent motion, they all moved in a body and each received a similar lap at each lace

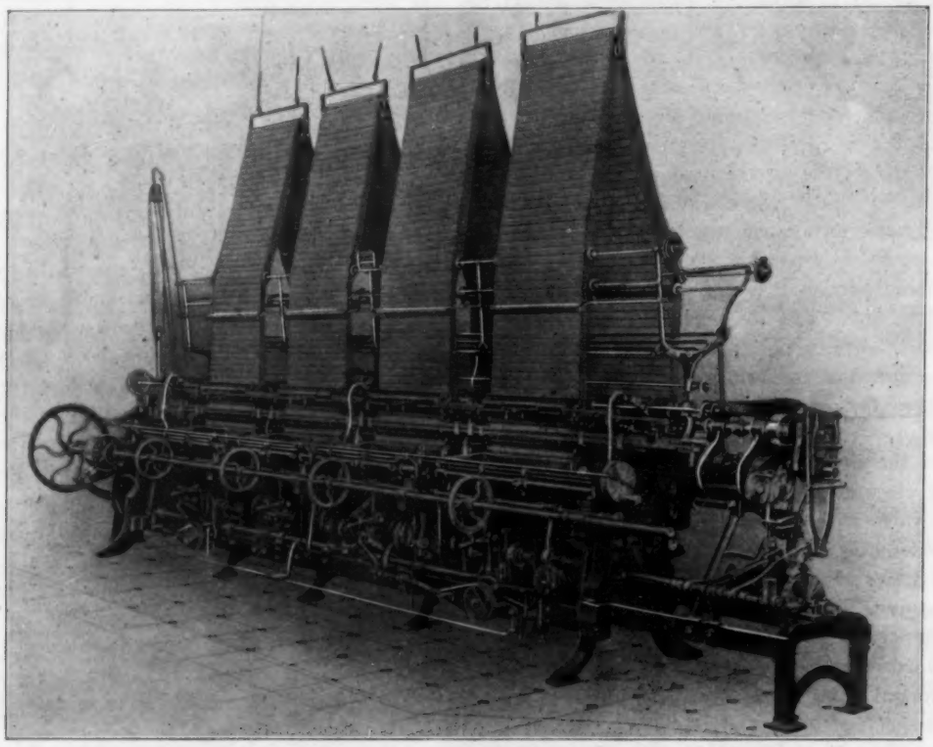


FIG. 4. A LACE MACHINE.

course. The result was that the patterns acquired a somewhat set appearance and lacked the qualities of flexibility. There could be but a small range, and the designs produced were not at all free in character.

By the latest type of lace machine, the points are arranged so that each has a motion independent of its neighbor. For this purpose there has been devised a simple yet effective selective mechanism in the form of an attachment construction on the principle first demonstrated by Jacquard for the weaving loom and to work this mechanism, sets of cards are cut according to design, a hole being made at the point where a lace stitch has to be formed, plain uncut card producing no alteration in the construction of the fabric. The lace machine works after a course of ordinary loops has been completed, certain points being made to descend on the needles according to the selection of the cards and effect the transferring of those loops from their own to neighboring needles. The points are arranged right across the width of the frame division and the lace pattern can be wrought the entire width. The lace top however is seldom worked at uniform width but is made in the V shape, where the width of lace fabric to begin with is quite small, but increases in extent on either side until the whole width is occupied.

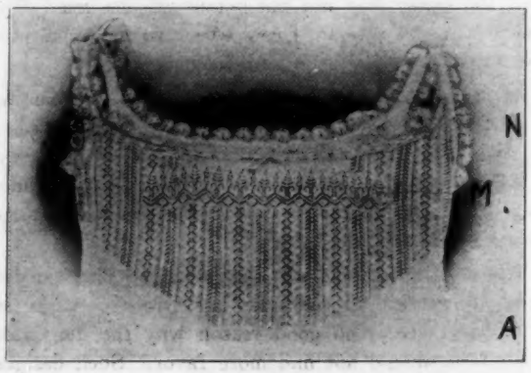


FIG. 5. A COMMON FORM OF LACE TOP.

This is carried out by means of a mechanism on the frame which on either side allows points not previously operated by the cards to be acted on according to the pattern. This matter will be made clearer by a reference to Fig. 5, which gives a view of the usual form of lace top attachment. The fabric is worked from A to N on the lace frame the darkened portions showing the lace design and the white portions being composed of plain fabric. Beginning at the bottom A, can be noted the gradual expansion of the lace pattern on either side of the central point until at M, the entire width of fabric is working lace stitch. The part shown gives a view of the front and the back portion may be made to correspond according to desire, or it may be plain. If the lace part is to be made on both back and front then it is an advantage to have the width of fabric composing the front portion greater than that of the back to give extra fullness, this obviating the necessity of inserting the usual bosom portions into the garments.

DESIGNING.

The subject of the selection and production of suitable designs is, at first sight, a rather complicated one, but on analysis the principles are capable of much elucidation and the making of original designs is not such an extraordinary matter as would appear. If the firm has to produce its own designs and cut its own cards, it should be undertaken only after a careful examination of comparative costs, as it is possible to monopolize the time of a mechanic in this work who could be much more profitably employed elsewhere. The making of designs and the cutting of cards is, properly speaking, a specialist's work, and there are firms which undertake this department exclusively and are therefore in a position to send out to manufacturers designs and cards corresponding at a very reasonable figure compared with the outlays incurred by a manufacturer conducting the operations on his own premises. In fact, many prefer to buy a series of designs and sets of cards rather than be put to the expense and the trouble of making them.

To this course there is one outstanding objection and that is the designs are the products of only a few brains and there is a tendency for them to be very similar in character, a firm in this work will not have the same scope for bringing originality, because they will be nervous about striking new sources of design origination, thinking they will have outlays without the designs being taken in quantity by the clients. The tendency for such firms is to confine themselves to the strictly conventional type of design, knowing that such will suit the average demands of the trade. If a manufacturer finds that his trade in this class of goods is growing, then he may well afford to nourish it by giving special attention to the designs and striking out on novel lines. By cutting the cards himself, he will have the satisfaction of knowing that his design is not being carried by all and sundry and will be able to obtain increased trade on the strength of this reputation for exclusiveness. For the guidance of such individuals some of the principles of this class of designing will be outlined along with indications of how the cards should be cut.

If Fig. 5 be again examined, it may be noted that the design resolves itself into two features, namely the groundwork which is made up of two or more simple designs arranged alternately in stripe form, whilst farther up at the edging of the pattern there is a different sort of pattern to give the ground a finish of style and elegance. The second part resolves itself into a series of arrow shaped figures which serve to complete the style. The lace visible above the arrow points is not made on the frame but bought elsewhere to be attached as a suitable edging around the top and the sleeves. This lace may be of silk, or for less expensive articles mercerized cotton, and it is provided with spaces through which ribbon can be strung which forms the means of attaching the garment to the neck.

GROUND DESIGNS.

In order to understand the composition of the more elaborate lace designs used in this branch of the trade, it will be helpful to study examples of the different elements which go to make up every design, however difficult it may appear. To produce a really effective lace design, certain errors have to be avoided which it is very easy to commit. It must be borne in mind that it is not advisable to place two lace points one above the other on the design paper, for to remove the yarn from the needle two courses in succession, would be to produce a large hole in the cloth.

When one point follows another in succeeding courses it should be in a diagonal direction when the same defect will not appear.

To build up a really successful lace design one has to keep in mind four elements: 1st, the amount of plain fabric visible; 2nd, the quantity of simple or ground lace stitch; 3rd, the bolder lace stitches which are introduced at suitable intervals amongst the quieter ground lace effects; and 4th, the character of effect employed at the edging of the pattern, this being selected so as to give an artistic and finished appearance to the cloth.

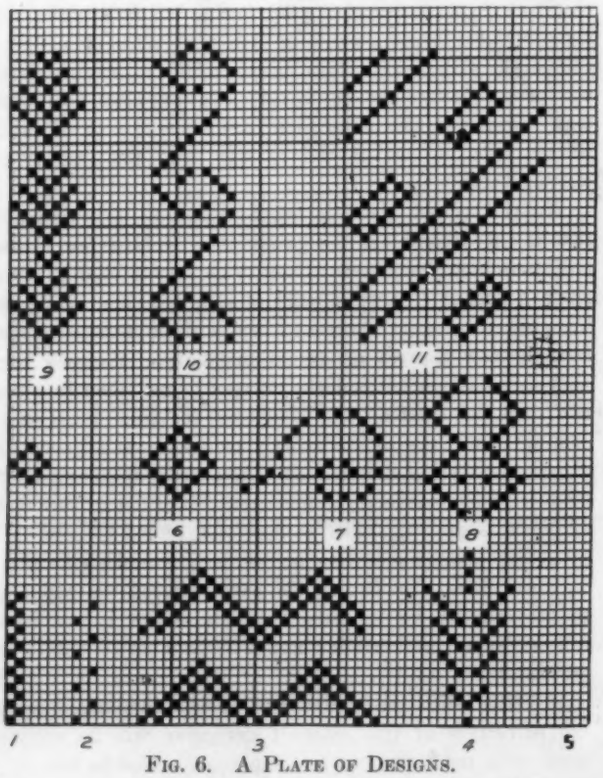


FIG. 6. A PLATE OF DESIGNS.

The accompanying plate of designs Fig. 6, has been constructed to give illustrations of the chief elements of design building and by a judicious and tasteful selection of these and the adaptation in suitable quantities, the most effective and successful results may be attained, not only for lace tops but also for the lace effects in vogue for hose and half-hose. Design 1 gives a sketch of the simplest ground lace effect, namely, the 1 and 1, but to work this 1 and 1 throughout would give a very open structure and so it is usual to have several vertical rows of plain stitches after every few vertical rows of lace work, for example 6 needles plain and 2 of pattern would be typical.

Design 2 is an easy variation on this where the lace stitches are introduced in a vertical direction in alternate manner, which scheme is often met with in this class of fabric. It should be mentioned that the marks on the design paper indicate in every case a point where a lace stitch will be lifted, thus making an opening in the fabric.

Designs 5 and 6 give illustration of the familiar diamond styles, design 5 being a small effect, and design 6 a larger variety. These are found very frequently in lace designs and for variation the smaller diamond may appear inside the larger to give a rather larger result. A more striking example of the diamond is seen in design 8 where there are two rows of plain fabric running down the center of the diamond, those two rows making the diamond stand out very prominently and effectively on either side so that this type may be used as a bold section of the design. It forms a very good style for an edging, imparting a finished appearance to the pattern.

Design 3 is often used as the sort of foundation on which a more fancy pattern may be laid and consists of a zig-zag effect proceeding in a horizontal direction, it also serves as a means of dividing off one section of the pattern from another, it facilitates a change of design and marks the transition from one to the other.

The effect shown in design 9 is often used for the more prominent part of a ground pattern, being used to intersperce the plainer ground portions and occurring in stripe form in a vertical direction. As this effect is more fancy in character, care must be taken to regulate the quantity used, for the beginner has the tendency to make too liberal a use of such pronounced effects and as a consequence the cloth assumes an overloaded aspect, the symmetry being disturbing to a person of taste. It also forms a very effective edging if this design 9 be taken as from the center only using the center line and the part on the right as a design, the effect is not so bold and it makes a very nice constituent even of a ground pattern. The upper edge of the pattern is built up of various elements, chief amongst which is the arrow design given at design 4. The effect is symmetrical about the center line and the points of lace gradually increases so as to give an arrow effect which constitutes an ideal completion to the entire design.

In the same connection one often finds some attempts at obtaining curved effects as given in design 7, this portion being found often on either side of a line which is to form the center of symmetry. For the same purpose designs like that given in 10 are often used and produce a very fancy and rich effect.

The most successful lace designs are undoubtedly those which are vertical in character and which occur in stripe form, but there is no good reason why the diagonal and twill effects should not find more favor. Such designs require more experience to produce but can be manipulated to give very original effects, whilst the labor of card cutting is not greater than in the case of the more direct designs. In using such effects, special care must be given to the size of the design otherwise the effect will be entirely out of place. For a stripe effect the manufacturer does not like a pattern which exceeds 3 inches in width, a common style being to give 1½ inches of plainer constituents and 1½ inches of the fancy effects. From the beginning of the lace to the edge of the arrow measures in most cases about ⅞ inch and the arrow edge extends for about 1½ inch. These are factors which must be more accurately known before the cards are cut, for it is advisable to have the card set of such a length that it will operate every lace course required throughout the entire length of the lace top. Thus if the length of the lace top in its entirety is 10 inches and there are 30 courses per inch with the lace machine operating after every course, then there would be 300 cards in the set. Similarly if the width of the section of the frame were 24 inches at the division, the cutting of the cards would require to be performed over this width. The arrangement of lace points is generally one for every alternate needle of the frame.

Design 12 in Fig. 7 shows a practical example which has been very successful for lace garments, enjoying a

large measure of popularity and forming indeed one of the staple varieties, which a close examination of the details will show that it has been built up from the individual features described in designs 1 to 10. In the width, the design repeats itself on 56, and if the frame is arranged 2 needles for every lace point, then the total extent of operation of the figure will be 112 needles. If the gage of the frame be taken as 30 this gives 20 needles per inch and so the design will extend over a space of 5½ inches, which

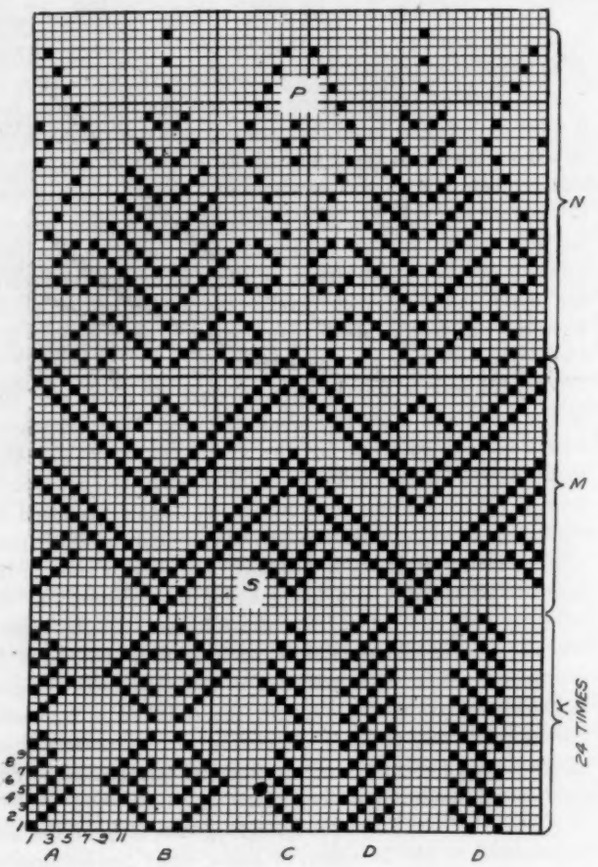


FIG. 7. DESIGN 12.

finished will be about 4 inches, rather wider than is generally found, a matter which could be rectified by working on a finer gage or effecting a proportionate reduction on the whole design. The first 24 courses form the ground or bulk of the design and would require to be repeated on the cards the number of times necessary to give the length, and after this would be found the dividing section marking off the ground from the arrow border which will be seen under the bracket M in the form of a zig-zag in horizontal direction. The arrow border proper really repeats itself on 28 stitches in the width but is run out twice to come straight with the ground design. Between the arrows the space P is filled out lightly with the diamond and at the base of the arrow is seen the curved form as already mentioned.

An examination of the composition of the ground design will show that in the part A it takes the form of the zig-zag edge on the right, and in section B a diamond part is inserted with two plain stitches running up the center which has the effect of showing up the figure in bold relief. At C is the same effect as is given at A, but reversed, this imparts a completed appearance to the diamond. At D we have a piece of simple twill ground running to the right for the first section and to the left for the second part. When the design repeats itself, the plain part is seen to be between two zig-zag edges A and C with excellent effect in the cloth. At the join of the ground section K and the dividing portion M large spaces occur at S but these have been filled out as shown.

The arrow edging is a very important feature of such designs and is instrumental in rendering an otherwise plain design extremely tasteful. The example given is one of the more complicated styles, for easier patterns the zig-zag dividing portion can be omitted and the arrow edging brought right onto the plain with the provision that any abnormal portions of plain fabric occurring should be suitably filled out with a few lace points. For a simpler design one method is to have a lace design like design 1 for about 1 inch and then have another inch of design like design 2 where the lace points are not so numerous. Enough has been said to indicate the manner of originating new designs and there are no great obstacles to encounter for each firm to bring out its own designs and so have a line of garments which will be confined to themselves, instead of being obliged to hawk about a few well worn effects which are the property of each and all.

(To be continued.)

Wishes Australian Agency For Hosiery.

The Editorial Department is in receipt of a letter from a correspondent who is desirous of obtaining the agency for Australia in the following lines: Ladies' cotton hosiery, seamless, 176 needle made from southern carded yarns. Men's half hose made from southern carded yarns, also 176 needle. Our correspondent wishes to represent the mills directly and not through a selling agent. He is prepared to furnish New York banking references and will finance all orders cash in New York. Any mills making this class of hosiery and interested in this proposition may communicate with the editorial department of COTTON for further information.

At the Chemists' Club, 52 East 41st Street, New York, Wednesday evening, November 10th, was a notable gathering of the following well known industrial chemists, at a dinner tendered by the management of the exposition, to discuss plans for the next National Exposition of Chemical Industries: Raymond F. Bacon, Chas. H. Herty, Henry B. Faber, A. D. Little, E. F. Roeber, George D. Rosengarten, T. B. Wagner, L. H. Baekeland, M. C. Whitaker, B. C. Hesse, Adriaan Negelvoort and Chas. F. Roth; also R. G. Hollaman and F. W. Payne of the International Exposition Company were present, all of whom will serve on the Advisory Committee for the 1916 National Exposition of Chemical Industries to be held at the Grand Central Palace, New York City, week of September 25th, 1916. At this meeting Dr. Chas. H. Herty was elected to serve as chairman of this committee for the coming year.

Plans for increasing the scope of this Exposition include using several floors of the Grand Central Palace, with speakers in the evening and motion pictures during the day from 11 A. M. to 7 P. M.

Dyeing, Bleaching and Finishing.

Preparing Cotton For Nitrating.

BY WILLIAM B. NANSON.

Gun cotton and absorbent cotton are alike in so far as they may be bleached in the same plant and with the same machinery, moreover, they must both be thoroughly and uniformly absorbent. At this point, however, their paths diverge and do not travel in parallel lines.

While the bleaching of absorbent cotton is carried so far as the fiber will stand and everything that is not cellulose removed, until even the cellulose itself is attacked and oxidized into oxycellulose, so that the cotton shows an increased affinity for the basic dyes,—the bleaching of gun cotton is carried out in such a manner as to avoid these very same results, the formation of oxycellulose being one of the rocks upon which the barque of many a bleacher has been wrecked, because oxycellulose cannot be nitrated, being either soluble in nitric acid or becoming converted during nitration, into some compound of a lower nitration value than gun cotton. In the one case it becomes an economic loss and in the other a physical danger, causing, as it does, an unstable condition in the colloid character of the cotton and rendering it liable to explode. So objectionable a feature is the presence of overbleached cotton or oxycellulose in gun cotton, that the British government has inserted the two following clauses into the specifications for cotton for nitration purposes:

"(1) Reduction of Fehlings' solution (1 vol. to 2 vols. of water) on heating 15 minutes at 100 degrees (CU_2O).

"(2) It must be entirely free from organic matter other than pure resilient normal cellulose, and on dyeing with a basic dye such as Fuchsine (Rosaniline Acetate) the fixation of color must be slight and uniform, and must show no deeply dyed particles of fibers.

The other specifications are:

"(3) Moisture, not more than 7.0 per cent.

"(4) Oily matter, not more than 0.6 per cent.

"(5) Soluble on boiling one hour in 3 per cent caustic soda not more than 5.0 per cent.

"(6) Mineral matter (ash), not more than 0.7 per cent."

To one familiar with the chemistry of the carbohydrates in general and of cellulose in particular, the significance of the first two specifications given are quite obvious—*the bleached gun cotton must not be overbleached.* In other words it must contain no oxycellulose.

Oxycellulose is formed when cellulose is acted upon by an oxidizing agent and these oxidizing agents may become active in either acid or alkaline solution, though a somewhat dffierent form of oxycellulose seems to be the result in each case; on the one hand we have the beta-oxycellulose produced by the action of acid oxidants, and the gamma oxycellulose produced by the action of alkaline oxidants. These will, however, hardly repay the trouble of a close study as their differences are of a chemical rather than a practical character and from a bleacher's standpoint they are both alike, except in this one particular—beta-oxycellulose possesses the property of strongly reducing Fehling's solution while the gamma cellulose has no reducing properties but combines vigorously with the basic dyestuffs.

It ought, therefore, to be obvious to the intelligent reader that the first two clauses of the specification are so drawn as to catch the bleacher "coming and going," as it were, so that no kind of overbleaching can pass the inspectors, for, it must be borne in mind that the oxycellulose products obtained in the usual bleaching operations are a mixture of both the beta and gamma products and probably correspond to the formula $C_6H_{10}O_6$. This body is very soluble in boiling solution of caustic soda and right here we run into clause 5 of the specifications, if there is oxycellulose present in the sample it will increase the percentage of (loss) waste in this test in direct proportion to its presence and hinder its chance of passing inspection.

Oxycellulose is *soluble* in a mixture of nitric and sulphuric acids and from this alone its objectionable character would become manifest by the great loss in weight that would accrue to the cotton when nitrated in the usual mixture of nitric and sulphuric acids. It is also produced by the action of chlorine in the presence of moisture. Strong alkaline solutions of the hypochlorites or caustic soda in the presence of the air, also bring about the oxidation of the cellulose and convert it into oxycellulose. Dilute caustic alkalis, or even milder alkalis, such as soda ash, have no deleterious action upon cellulose in the absence of oxygen. If, however, oxygen be present, the cellulose is converted into oxycellulose, the rate depending on the concentration of the alkali, the supply of air, and the temperature. This point is of much importance in soda boiling.

It will be seen from the foregoing that it is of the first importance to the bleacher to know when oxycellulose is being formed, and where, and we therefore give herewith a rough and ready process applicable to the practice in the bleach house. It has been found that when oxycellulose is treated with a little Indonthrene Yellow it instantly turns blue when boiled with an 8 per cent solution of caustic soda.

A small quantity of Indonthrene Yellow is dried and then dissolved in strong sulphuric acid, this solution is then poured into cold water and neutralized with alkali. This furnishes a standard test liquor in which the Indonthrene Yellow is suspended in it in a finely divided condition. The cotton to be tested is now passed through a few drops of this test liquor added to a 10 per cent solution of caustic soda until the sample is thoroughly and evenly saturated. The cotton sample is then slightly squeezed in the hand to remove the superfluous liquor and held over a beaker or boiling kettle in which the water is vigorously boiling. Within a minute the hot steam will cause a deep blue stain wherever any oxycellulose is present, the sample must be removed as soon as the blue stain appears or the whole sample will be blue, which will occur in about five minutes, even if no oxycellulose be present. The sample, after one minute's exposure to the boiling steam, should be removed, rinsed in water, then washed well in soap and water to re-

move the loose dyestuff, when it will be found that wherever oxycellulose is present a reduction of the dyestuff has taken place and that those parts of the sample are dyed a fast blue color.

The test with the Fehling solution, which is simply a solution of copper sulphate to which caustic soda has been added until the copper hydrate first precipitated is redissolved, is two intricate for the average bleacher to apply in the bleach house, but we may give it here: About 3 grams of air-dried cotton are boiled for 15 minutes under a reflex condenser with 100 c.c. of Fehling's solution and 200 c.c. of water, the flask being constantly shaken. The hot liquid is then filtered, the residue washed with boiling water, and heated in the water bath for 15 minutes with 30 c.c. of 6.5 per cent nitric acid, and the dissolved copper is finally determined by the electrolytic method.

We have seen that the specification says that not more than one per cent of the copper in the solution must be reduced by the cotton and we may say here for the guidance of the bleacher that even pure cellulose has some slight reducing action on Fehling's solution, that the best bleached absorbent cotton has from 1.5 to 2.0 per cent, and bleached cotton rags as used for fine papers, from 6.5 to 8.0 per cent. From these figures may be gleaned the fact that to bleach cotton fiber to fill the specifications given in clauses 1 and 2 is a proposition requiring more than ordinary care, experience and skill.

In specification 3 we find it stated that the gun cotton must not contain more than 7.0 per cent of moisture. Now the normal water content of our dry cotton rises with the humidity of the atmosphere, but the average quantity is about 8 per cent. That is to say, that if one hundred pounds of absolutely anhydrous cotton fiber were exposed to the air under all normal conditions, it will take up 8 pounds of water and hold it with slight variations, more or less, according to the amount of humidity in the surrounding atmosphere. It will therefore be perfectly clear to the bleacher's understanding, that to fill the specifications the gun cotton, when finished must be thoroughly dried to pass this test successfully. As a matter of fact it will be difficult to do this, even under favorable circumstances, without the exercise of special care in the drying. A study of the figures will show that in this test for moisture the bleacher has no latitude; there is no margin of safety.

Specification 4 says there shall not be more than 0.6 per cent of oily matters left in the cotton. This clause is rather generous to the bleacher for with good boiling and the proper detergents mixed in the proper proportions, it is easily filled. The test for this is ethyl ether, which will extract from the cotton all the oils and fats. The extracted liquor is then evaporated and the residual oils and fats weighed and the percentage calculated. Bleached cotton which contains more than 0.5 per cent of matters which can be etracted by ethyl ether, indicates a faulty boil.

Specification 5 rather includes all the others. Pure cellulose would lose about 3 per cent in weight in this test and if the cotton contained oily matters through a faulty boil or oxycellulose through overoxidation or dirt and extraneous substances, all of which are soluble in caustic soda, it is easy to see how the cotton can lose more than 5 per cent in this test if care is not taken; but, with only average care, this test ought to be passed successfully by the bleacher. There is one thing in favor of the bleacher in this last test,—it is one he can easily make himself and prove his own product.

Specification 6 says there shall not be more than 0.7 per cent of ash in the cotton. The ash content of the cotton represents the residue of the various mineral matters left in the cotton, such as silica, lime, potash, aluminum, etc. Normal cotton contains usually about 1 per cent of these matters and by chemicking and souring the cotton properly these can be easily eliminated or at least so far as to fully satisfy the 0.7 per cent margin allowed in this ash clause. As a matter of fact, if the water is pure, properly bleached gun cotton is practically ashless; the ashes amounting to about 0.015 per cent of the weight of the cellulose.

While the ash content of a gun cotton is easily determined in the bleach house, the most accurate and careful work is necessary to get it correctly. The instruments required are a spacious drying apparatus of copper, two exsiccators, one large and one small, a platinum crucible (about 0.7 ounce) with cover, a stand, a spirit lamp, a blast lamp or Bunsen burner, and a particularly exact balance scale. The larger exsiccator is used for the dry cotton and the smaller for the platinum crucible. Every time the crucible is used it must be thoroughly cleansed with the finest sand, which has been boiled previously with diluted hydrochloric acid, dried, fired and kept in the small exsiccator until the next time it is used. The manipulations are as follows: The sample of cotton to be tested is first dried in the drying apparatus at a temperature of 190 to 210 degrees F. It is then transferred to the exsiccator for 15 minutes and then carefully weighed to get the moisture content. It is then put in the cleaned and carefully weighed crucible. The crucible is supported on its stand and the cover adjusted so that air may enter. The crucible is first heated red hot at which point the hydro carbon constituents volatalize; the heat is then increased for 20 minutes, until the crucible glows white hot. After the ash turns white, or gray white, the crucible is placed in the exsiccator for 10 minutes and weighed; the incineration is then continued until a constant weight is obtained.

It might be as well to say, before dismissing this part of our subject, that in the U. S. army specifications there are clauses to the effect that the bleached gun cotton must contain not more than 7.0 per cent moisture, nor more than 0.8 per cent ash, nor more than 0.4 per cent of material which can be extracted by eithyl ether; to contain only traces of lime salts from the bleach and no hydrochlorites; to be free from foreign matter of any kind and to be of such texture as will easily nitrate by the usual methods. All of these specifications are fully covered in our discussion of the British army specifications.

BLEACHING.

When bleaching cotton fibers for gun cotton it would be well for the bleacher to always keep in his mind the one important basic fact—that bleaching consists simply in removing, as far as possible, the whole of the extraneous matter from the cotton and leaving pure cellulose behind. And, (theorists and chemists take notice of this) the process is as much a mechanical as a chemical one though largely based upon the chemical properties of the impurities and the inactivity of the cellulose.

I have before me a table showing all the constituents of

the cotton fiber with their chemical contents, proportions and reactions with various reagents. The bleacher would do well to ignore these theoretical tables of contents as they are published from time to time, because they are all based upon the makeup of the pure, clean cotton fiber, whereas, the stock with which a bleacher has to deal, being waste materials which have passed through the machines of a manufacturing plant, contain not only the natural impurities of the cotton fiber itself, as per the table, but all the adventitious dirt and oily and other matters used in the course of manufacturing, and this is why many of the so-called bleaching recipes fail to meet the requirements when practically applied.

The composition of the stock (waste) we shall have to deal with varies between quite wide limits, but I think the following figures represent a fair average of its conditions:

Water, 8 to 10 per cent.

Oil, wax and fat, 1 to 5 per cent.

Mineral matter, 1 to 2 per cent.

Proteids and other bodies soluble in alkali, 4 to 8 per cent.

And in the case of card strips and fly a large additional percentage of iron.

The oil, wax and fat found in cotton waste contains, in addition to the oils and waxes normally present in the cotton fiber, large quantities of lubricating oils added during the process of manufacture. The natural fatty matter in the cotton belong chiefly to the group of bodies called waxes. Fats are, in general either saponifiable or unsaponifiable. A saponifiable oil is a compound of a fatty radicle with glyceryl, the glyceryl radicle playing the part of a base. When saponifiable oil is treated with caustic soda it is saponified, *i. e.*, decomposed into glyceryl and the sodium salt of the fatty acid present. These compounds are known to the layman as soaps.

An unsaponifiable oil, as a rule, consists of hydrocarbon oils such as petroleum. They are unchanged by boiling with caustic soda but may be emulsified by alkaline carbonates in the presence of phenol and turkey red oil. They are the chief constituents of lubricating oils. The waxes are similar in composition to the saponifiable fats, but contain more complicated radicles. They are decomposed by caustic soda in the same way as the more saponifiable fats but not so readily unless their proteid constituents are first removed by a preliminary boil. They thus occupy a position midway between the saponifiable and non-saponifiable oils. There is also a natural wax in the cotton which is slowly saponified when boiled with caustic soda. Therefore, it may be deduced that the correct procedure to remove the fatty and waxy matters from the cotton would be a long boil in caustic soda to remove the saponifiable fats, the addition of soda ash and turkey red oil to emulsify the non-saponifiable oils and fats and a second boil to remove the last remnants of the waxes.

Proteids are among the objectionable constituents of the cotton which must be removed by caustic soda boiling. Experience has shown that they act as a waterproofing element to protect the fats and waxes from the saponifying and emulsifying action of the caustic soda and soda ash in the first boil, hence, the necessity of the second boil, in which most of the fats and waxes are removed. These proteids are nitrogenous compounds and are composed of carbon, hydrogen, nitrogen, oxygen and sulphur. The proportion of nitrogen, present is from 15 to 18 per cent. They are known as albuminoids and are soluble in alkaline solution, and prolonged boiling changes them into soluble and diffusible peptoms, which are easily removed from the cotton by subsequent washing operations. The solubility of proteids is considerably retarded by the presence of salts of calcium and magnesium in the alkaline solutions, which goes to show the danger of using water for bleaching gun cotton containing lime or magnesia, for, not only do they prevent the dissociation of the protein matters in the cotton, but they add very materially to the ash content. The constitution of these proteids are not certainly known, but they probably contain an NH_2 group, and, like other bodies containing this group, are able to combine with chlorine, forming insoluble bodies called chloramines. These may become subsequently decomposed with the liberation of free hydrochloric acid and the formation of hydrocellulose. This hydrocellulose will not reduce Fehling's solution like the oxycellulose will and will therefore pass that test all right, but it will fail to pass the Fuchsine test; also the boiling in caustic soda. It will also dissolve in the nitrating process and cause loss—in other words it lowers the nitration value of the cotton and will not pass.

The amido compounds in cotton and the pectins, also the tannic acid, are all removable in the caustic boil and what we have written about the proteids is also applicable to them.

The coloring matters of cotton need not interest us particularly as we do not need the cotton white and they are in such small quantities and so easily removed to the necessary degree by the other operations that it is not worth while to use our space to discuss them. In practice these coloring matters can only be eliminated by chlorine. The mineral matters found in cotton waste vary from 1 to 2 per cent according to the stock, and consist of aluminum, magnesium, sodium, potash, and iron, in combination with carbonic, sulphuric and phosphoric acids. These all go to increase the ash content if not removed and if any insoluble sulphates, such as lime, remain in the bleached stock there is the added danger of the formation of unstable compounds in the nitrated gun cotton, which would render it liable to decomposition and premature explosion. These mineral matters may be removed by souring the cotton in a mixture of hydrochloric and sulphuric acids. If a perfectly ashless product were required, however, it would be necessary to add a portion of hydrochloric acid to dissolve any silica which might remain.

PLANT AND PROCESSES.

It is absolutely essential that waste introduced for bleaching into gun cotton should be thoroughly cleaned before bleaching to remove all the ligneous matters such as motes, leaf, seeds, shive, etc., as these, even if bleached, cannot be converted into cellulose suitable for the ordinary bleaching methods and will, if left in the stock, materially reduce its nitrating value and render it liable to rejection. Cop and other hard or spun waste, being free from leaf, motes, etc., may be run once through a fine section waste breaker, but the fly, strips, sweeps, etc., must be run through a ten foot willow with condensers and cleaning trunk and should be blown into bins on the top floor of a three story

building. From this floor the cleaned stock is shoveled through a trap door immediately into a kier on the floor beneath where it is boiled once in a tilting kier, or in other words, a kier that can be swung an center bearings like Fig. 1. After boiling the allotted time the stock is rinsed in this kier with one or two clean waters, drained and the kier tipped over and the stock dumped into another kier below it on the ground floor, so placed that when the upper

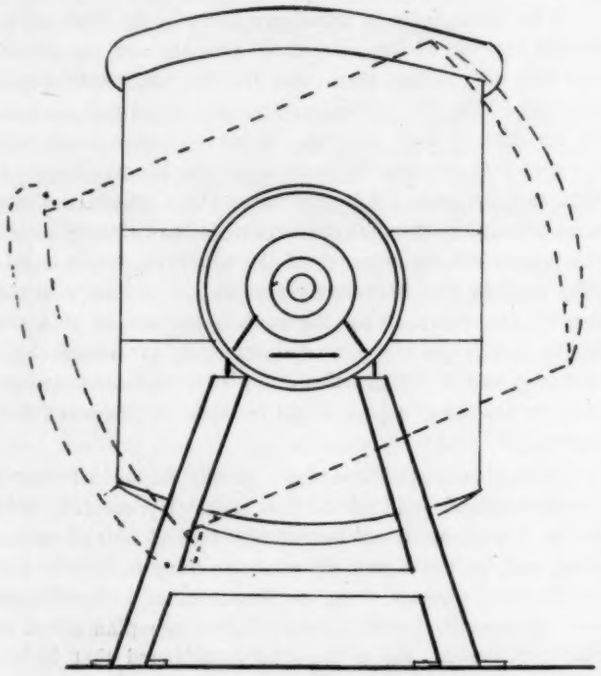


FIG. 1. A TILTING KIER.

kier is tipped the stock will slide from the upper kier right into it. In this second and lower kier the stock is boiled a second time and can also be rinsed and chemicked in it if desired. After being treated in the lower kier the stock is thrown out into a rotary bleaching and washing machine Fig. 2, where it is soured, washed and finished. From this machine it may be carried by a continuous process, working automatically by means of an apron, through heavy squeeze rolls, which deliver it, partially dry, into a tube connected to a stock blower which opens it and blows it into the automatic feeder of the raw stock drying machine, where it is dried at the rate of about 400 pounds per hour.

BOILING.

For reasons which have already been explained, we boil the stock twice, first in the tipping kier upstairs and then in the stationary kier below. We do this for two reasons, one of which is that it reverses the position of the stock in the kier, *i. e.*, the stock at the top of the tipping kier in the first boil will, when dumped into the kier below, be on the bottom for the second time. This is important, for it is a well known fact in practice, that it is difficult, if not well nigh impossible, to boil the stock in the bottom of a kier as thoroughly as that on the top, owing to the difference in the temperature and from other causes. There are also chemical reasons for boiling twice which we will discuss further on.

Boil the stock in the first boil with 3 per cent of caustic soda to saponify the saponifiable oils and fats and other matters soluble in caustic alkali; 2 per cent of soda ash to emulsify the non-saponifiable oils and wax; and one per cent of turkey red or monopole oil to act as a detergent and assist the caustic soda and the soda ash mechanically by setting up pedesis, moreover, this turkey red oil will also act as a preventive of the super oxidation of the cotton into oxycellulose. The total liquor in the kier must be of sufficient volume to cover the cotton about 6 to 12 inches in depth.

We have said before that the reactions which take place in bleaching are not all chemical, many of them are of a mechanical character as in the case of detergents (turkey red oil, etc.) which act by pedesis, *i. e.*, they keep up an oscillating motion among themselves which washes or rubs the stock and frees the oil and wax from its binding constituents, so that it can combine with the caustic to form a soluble soap which can be removed in the subsequent washings; but in no place is the value of mechanical action made so apparent to a bleacher as in the boiling with caustic soda. It is absolutely essential that caustic soda liquor should be kept in motion. Experiments have shown that the rate of saponification of oil by means of caustic alkali depends very much upon the velocity of the circulation, the liquor tends to become weakened and carbonated in contact with the stock, and if the circulation is not thorough, it will not be replaced by fresh liquor with sufficient rapidity to keep

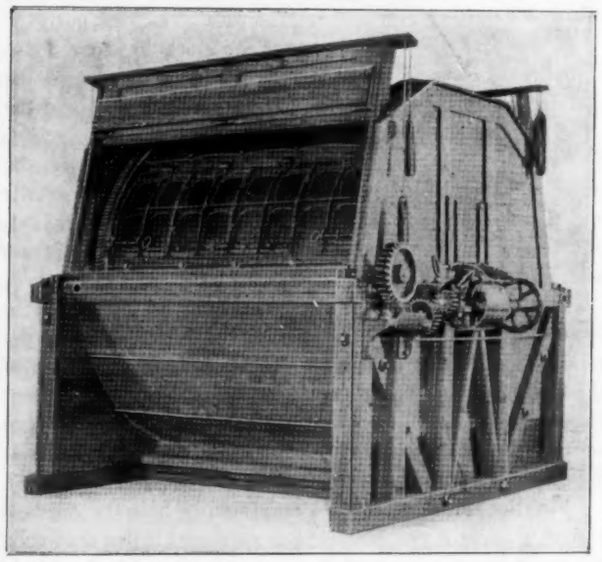


FIG. 2. A ROTARY TYPE OF BLEACHING MACHINE.

up the rate of saponification and the stock will be incompletely and unevenly boiled.

For these reasons I prefer to boil the stock in a low pressure kier with a mechanical circulation produced by means of a centrifugal pump driven by an electric motor and in which the liquor is kept hot by means of an outside heater. In all kiers of the injector type the circulation is not positive and for this reason this type is not recommended, though good work may be, and can be done by them if one wants to take chances. Boil the stock for 12 hours in the first boil then run the old liquor off and *at once* fill up with cold water. Run this off and repeat this several times until the water comes off clear.

There are a few important rules to be observed in boiling kiers with caustic alkali. The stock should be well

packed in the kier, loosely and evenly and wet down from time to time as the filling proceeds, spaces in which steam or air could collect causes overheating and overoxidation. If the packing be uneven the liquor will tend to circulate freely through the loosely packed portions, leaving the tightly packed parts which offer greater resistance to it, imperfectly scoured. Thorough saturation before boiling is essential. The stock should be firmly battened down after filling and the lye or boiling liquor entered from the bottom to drive out all the air. Care must be taken that the stock is completely immersed in the solution and that no steam pipes come into contact with it. After boiling, the stock should be washed in the kier and never exposed to the action of the air as long as any traces of alkali are left, because, the incomplete removal of the alkali before the material is removed from the kier favors the production of oxycellulose.

After boiling and washing in the tipping kier and allowing the stock to drain, the kier is tipped over (see dotted lines in Fig. 1) and the stock is dumped into the kier below and distributed evenly as it runs in. After this second kier is filled it is washed again in two or three waters. We have now a kier full of stock that has been well washed from both ends and the cotton from the bottom of the first kier is at the top of the second kier. From this point we can follow out three methods of procedure either one of which will make perfect gun cotton if carefully carried out.

In the first place we may sour the stock for four hours in hydrochloric acid at 2 degrees Twaddle to remove the iron (of which there is a large percentage in waste) and the other mineral compounds which go to form the ash content. The stock is then washed in the kier until no acid can be tested and then boiled again for 6 hours in 3 per cent caustic and 2 per cent soda ash, then washed and soured in sulphuric acid at 1 degree Twaddle, then washed free from acid, squeezed and dried.

In the second method the stock may be chemicked in hypochlorite of soda,—the making of which I have described in a former article on bleaching absorbent cotton,—then washed and boiled again or 6 hours in 3 per cent caustic soda and 2 per cent soda ash, then washed and soured in c mixture of hydrochloric and sulphuric acids at 2 degrees Twaddle, then washed free from acid and dried.

For the third method we may simply boil the goods a second time in 3 per cent caustic soda and 2 per cent soda ash for 6 hours, wash and sour in a mixture of hydrochloric and sulphuric acids at 2 degrees Twaddle, wash free from acids, squeeze and dry.

In these three methods all the operations after the second boil are conducted in the rotary machine except the first rinsing from the soda which is in all case saccomplished in the kier immediately after boiling, and before the stock is removed.

It must be remembered that there is nothing to be gained by chemicking the stock so far as bleaching is concerned; the stock is not required to be white, the color of it cuts no figure provided the other requirements are up to specifications and the chemic removes no foreign matters that are appreciable from the cotton, it simply oxidizes certain colored matters into a colorless condition. Chemicking does, however, cause combinations to be formed among the various coloring and other matters in the cotton which render them much more readily saponified and dissolved in the subsequent boil and for this reason method number two possesses some merit. There is, however, always the following dangers and objections to its use:—Cost; the probable formation of oxycellulose; and the danger of the formation of chloramine compounds. If bypochlorite of soda be used for the chemicking, however, these dangers are eliminated, or at least, reduced to a minimum.

It has been found in actual practice that the first boil in caustic removes 92 per cent of the proteids and the second boil only 0.3 per cent more; that the first boil removes 20.5 per cent of the fats and waxes and the second boil removes 44 per cent of these matters. It has also been noted that the first boil removes 88 per cent of the mineral constituents and the second 8.1 per cent. These results indicate most plainly the chemical importance (I have already shown the mechanical importance) of the two boils, for it is evident that the first boil merely acts as a preliminary to the second boil by removing the protein matters so that the alkilis can get at the fats and waxes in the second boil, and it is with a full practical knowledge of these reactions that we counsel two boils in all methods of preparing gun cotton.

As regards the third method, it will be noticed that I use hydrochloric acid in the final sour. Hydrochloric acid being a gas, can never be entirely washed out of cotton fiber, and, as it is a very objectionable thing to have in gun cotton, causing, as it does, the formation of hydrocellulose and other evils, I would rather follow the plan given in the first method, for it must be remembered that hydrochloric acid has got to be used at some stage in the process to eliminate the iron, therefore I prefer to use it in the intermediate sour between the two boils and use the sulphuric acid alone for the final sour, as this acid, being a solid, is much more easily washed out. In any event, no matter what acid be used, great care must be taken to thoroughly wash it from the finished stock. So important is this that it would be well to test the finished stock from time to time as it is thrown from the kier.

To test the neutral action of the cotton a solution of nitrate of silver may be used to advantage. The wet cotton is squeezed with the hand over a glass funnel and the water filtered into a test tube. Into another test tube containing distilled water, a few drops of a test solution of nitrate of silver are added, and the same quantity is added to the filtered water from the cotton. The two tubes are then compared against a black background. If not neutral, the water expressed from the cotton will show an opalesence, or milkiness in excess of the pure water, due to the formation of an insoluble chloride of silver from the chlorides remaining in the cotton and show that further washing is necessary.

Under no circumstances must sulphuric acid be used for souring when chloride of lime is used.

"The land question means hunger, thirst, nakedness, notice to quit, labor spent in vain, the toil of years seized upon. . . . the despair and wildness which springs up in the hearts of the poor, when legal force, like a sharp harrow, goes over the most sensitive and vital right of mankind."

Practical Problems Discussed by Cotton's Readers

We invite our readers to make use of this department for the discussion of any and all problems arising in the mill or the finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so indorsed. This department is open to all. Suitable letters are paid for in cash.

Still Work For the Experts.

EDITOR COTTON:

A superintendent, with whom I have had the pleasure of doing considerable work, has recently called my attention to your very interesting article "Beat them to it" in the October issue of COTTON. There is just one point upon which I should like the liberty to comment very briefly.

Quoting from the article, "Just so, it would be well for efficiency men to remember that if all superintendents and overseers had as much training and ability to study out improvements as they have, there would be no work for the experts to do."

My experience, since specializing in textile mills, convinces me that even though all superintendents were formerly successful efficiency engineers there would still be "work for the experts." Almost any mill superintendent who maintains 90 per cent of maximum results will agree with me that routine problems claim most of his time and that whenever he tries to study out some special problem he is certain to be interrupted by some other matter requiring his personal attention. It is this lack of time for uninterrupted study, more than lack of ability or training which prevents a superintendent from realizing the other 5 or 10 per cent which may be so essential to profitable operation.

I could sight several instances where results were obtained so much quicker through the cooperation of the superintendent and overseers with the efficiency engineer that the value of the months gained would pay several times over for the services of the engineer.

While I may differ with your correspondent on this particular point, I find very much value in the article and I look forward to the opportunity to read similar discussions of other problems of management. Enclosed you will find my subscription for the coming two years.

L. E. R. (Mass.)

What is the Cause of Flats on Roll Collars?

EDITOR COTTON:

I should like to have the opinion of several good cotton carders on what causes the collars on metallic rolls to have flat places on them? Is it too close setting or not enough weight?

Will you please put this question in your Practical Problems Department Ed. (Maine.)

[Note. We wish to call the attention of the writer of this letter to the rule that correspondents must furnish the Editorial Department with their name and address when writing for publication. These need not be published but should be given.—Editor.]

Setting the Heilman Comber.

EDITOR COTTON:

Being a constant reader of Practical Problems, I would like to say something regarding resetting combers.

There are found in the mills today four distinct types of combing machines, the Whitin, Nasmith, Alsatian and Heilman types. The Heilman type are obsolete from the builder's point of view, being too complicated and having a low production, although producing a high grade of sliver, but as it is found in many of the mills of today, I will take this type as the basis of the following settings.

When starting to take a comber down, break out the laps and run it bare before stopping, it is then best to lock the machine, or throw off the driving belt. Take off all the loose parts, these include leather detaching rolls, lap aprons, web pans, brass web guides, table calender rolls, weights, chains, weight-hooks and top feed rolls. Turn the comber round by hand and have the fluted segment on top (7½ index). Take off top combs, slide the top comb arms on the shaft to the middle of nipper frames, turning them up out of the way; loosen up the nipper rods and disconnect them from the frames; and at the same time take off the nipper springs; next, take the bolts out of the nipper stands, and the caps off the feed rolls, the nipper frames are then lifted out with the feed roll and disconnected. Next take out the horseheads and the delivery roll.

Having the comber down, look over everything and see that anything worn or broken is repaired while the comber is being thoroughly scoured.

Before starting to reassemble, set the nipping frames to hold paper the entire length, and set the lip of the knife from the cushion plate with a 23 comber gage. Having the nipping frames set, start putting up the comber by putting in the horse-heads and delivery roll. Line up the delivery roll to the fluted segment, 22 gage. If the roll binds, loosen up every other stand, allowing the roll to line up itself; this allows for the wear of the segment.

Set the front flute of segment to delivery roll 1⅛ gage, index at 5.

Set the feed roll to the delivery roll, 1⅞ inch gage.

Set the top comb shaft to the delivery roll using 7 inch gage.

Time the delivery roll so it will start to come forward at 6 index; this is done by sliding out the 80 tooth gear.

Put on all weight hooks, chains and weights, put in leather detaching rolls, and weight them down, turn to index 6½ and insert twelve pieces of writing paper about ⅞ inch wide and 10 inches long, two under each leather roll, and set the rolls so that the paper can just pull out without tearing. Then turn the comber round and have the paper leave the bite of the rolls at 9¾ index; this is accomplished by work-

ing on the quadrant, and moving the lifter cam on its sleeve.

Take out leather detaching rolls.

Connect the nippers to their stands on the floor and slide the feed roll through them; lift them into the comber, putting the feed roll in its bearing; then bolt down the nipper stands. Starting at the middle loosen up every other nipper screw, working both ways. Set the nipping knives to an angle of 30 degrees. Line up the nipping frames and cushion plate to delivery roll, 1¼ inches gage, set the knife to the needles 20 gage. Set alternate nipper screws with paper to pull out with the same tension. Connect the nipper rods and put on the nipper springs, giving the springs suitable tension.

Set the nipper rods, using ¼ inch step gage, at the same time try the knife to the needles, 20 gage. Time the nippers to leave at 9¼ index. Put in the top combs. Set these at an angle of 30 degrees, giving the leather detaching roll a little play. Set the top comb to the fluted segment, 21 gage, index at 6. Turn to index 5, and set the top comb arms to paper, this is done by turning the stop screw on the top comb shaft.

Set the top comb cam to drop the top combs at 5 index. The comber is now ready to run, but before starting up, be sure everything is tight, then let it run for about five minutes for everything to settle in their places. The loose parts (which should be polished) are then put on and the laps fed in. The comber should be run 2 or 3 hours before the percentage of noil is taken. If the percentage is too light, feed later, and vice-versa.

The preceding settings are for 1¼ inch staple cotton but will take anything from 1⅛ inch to 1⅜ inch staple without injury to the stock. I would advise any reader, who is having trouble with his piecing to try these settings.

Honey. (R. I.)

What Does it Cost to Clean Cuspidors?

Sanitation in the factory work room is one of the necessary adjuncts to a large production and a high quality of product. One of the evils which every cotton manufacturer has to meet and combat is that of indiscriminate spitting. Many of the male operatives use tobacco and even those who do not frequently look for a dark corner in which to spit. This practice, as is well known nowadays, is a dangerous one from the standpoint of health, and even the placing of the common, dirty, ill smelling wooden cuspidors filled with sand, does not very much improve the situation. While a man is usually kept to regularly move and clean these cuspidors, they asorb a certain amount of their contents and become filthy and insanitary. Many manufacturers will be interested to learn that a corporation has recently been formed at Columbus, Ga., known as the Wolfson Tray Company, Inc., to manufacture a special sanitary paper cuspidor at a very nominal price which may be burned when dirty and replaced with a new one. These cuspidors are made of waterproof paper board, colored red, and present users are quoted as saying that they find these paper cuspidors giving perfect satisfaction in their mills and that the mills are much cleaner and more sanitary because of them.

Desires the Weight of Picker Laps.

EDITOR COTTON:

I have been a constant reader of Practical Problems for the last two or three years and must confess that some articles have greatly interested me. A good many times I agree with the writers, but there are also times when my opinion differs.

I note in COTTON for November that "Wash (Mass.)" has an article on "Changing Picker Laps." I have read a good many of "Wash's" articles and will give him credit for some good ones, but I can't understand and how he happened to hand out such an article as the one mentioned. He states that the most up-to-date picker turns off a finished lap of about 5½ yards in length. I have worked on a good many makes of pickers but I never saw such a short lap as that. At present I have Atherton and Kitson pickers, which make laps about 50 yards long. Either "Wash" must have made a mistake in his letter, or else it is a mistake in the printing.

I wish "Wash" would correct that, if it is wrong, and also tell me what weight of lap (oz. per yd.) he has in mind. It must be a light lap, because we make a 14 ounce lap on the Kitson (which is equipped with a 64 tooth measuring gear), and if we made the lap much larger it would rub against the cotton coming through the calender rolls and surely no carder would want his laps scraping. I would also state right here that these pickers are not making a soft lap, either.

"Wash" also states that he changed his measuring gear from 64 teeth to 80 teeth, *i. e.*, he makes his lap ¼ larger than it was. Maybe he did, but unless he uses a very light weight lap, I don't see how he did it. Furthermore I will say that I never saw a stripper or lap-carrier carry more than one lap at a time, except on a truck, so I don't see how "Wash" can call that common practice.

A. J. O. (R. I.)

[Note. The figures mentioned by "A. J. O." is a typographical error and should read "about 52½ yards." —Editor.]

How Long Does Your Broom Last?

A well known railroad magazine recently published an interesting little notice on the cost of brooms and instead of figuring the cost in money, they handled it from the standpoint of ton-miles. They make the statement that "if the once-a-month broom can be converted into the two-months broom, the economical station agent saves for his railroad, the cost of hauling one ton of freight 35 miles every two months, which, six times a year, means the cost of hauling a ton of freight 210 miles."

This is a rather unique way to consider the question of broom cost. It might be well for those cotton manufacturers who are still using corn brooms for a large majority of their sweeping to figure the cost a little more closely. A comparison of the wearing quality of the average mill broom as compared with brushes and floor sweeps will be well worth the study of any manufacturer not at present using these newer appliances for cost saving in cotton mills.